

South Carolina NPDES Permit # SCR030000
Small Municipal Separate Storm Sewer System (SMS4)
Annual Report

Permit Coverage #SCR030000

Reporting Period: January 1, 2016 – December 31, 2018

Permittee: [City of Goose Creek](#)

Program Name: [MS4 Stormwater Management Program](#)

Reporting for more than one Program: [No; IGA with Berkeley County](#)

(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: [Jake Broom](#)

Title: [City Administrator](#)

Telephone Number: [843-797-6220 x1113](#)

E-mail Address: jbroom@cityofgoosecreek.com

Mailing Address: [519 North Goose Creek Blvd. P.O. Drawer 1768, Goose Creek, SC 29445](#)

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: 4/6/18

(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

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E-mail Address:

Mailing Address:

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(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

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Questions? Contact (803) 898-4300

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Permittee: Berkeley County

Program Name: Berkeley County MS4

Reporting for more than one Program: Yes

(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 Peagler, III

Title: County Supervisor and Council Chairman

Telephone Number: 843-719-4094

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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

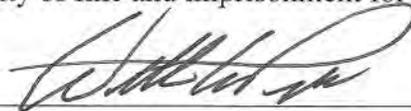
E-mail Address: thomas.lewis@berkeleycountysc.gov

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

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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: _____

4.9.18

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Year 3-4 NPDES Annual Report for Berkeley County City of Goose Creek City of Hanahan



I. Annual Report Information (§5.3):

This Annual Report (Years 3-4) for Berkeley County, the City of Goose Creek, and the City of Hanahan reflects progress towards achieving the statutory goal of reducing the discharge of pollutants to the MEP. 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 required information and data for each of these SMS4s were completed as part of this Annual Report. The intergovernmental agreements are located in Appendix H of the Stormwater Management Plan. Since the previous report (Years 1-2), the Berkeley County SWMP has been updated to include implementation services for Hanahan and Goose Creek as well as individual Notice of Intents for each municipality.

II. Obtaining Authority (§1.4):

1. Have there been any areas annexed into your SMS4 area after you received coverage under this general permit? Yes No
2. If yes, has your SWMP been updated to include these areas and a schedule for BMP implementation in these areas? Yes No

III. Special Conditions Applicable to Stormwater Discharges to Sensitive Waters

A. General Determination of Receiving Water Conditions and Impacts (§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
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
 - Berkeley County discharges into: Wando River (SFH), Fogarty Creek (SFH), Ralston Creek (SFH), Beresford Creek (SFH), Martin Creek (SFH)
 - City of Hanahan discharges into: [none at this time]
 - City of Goose Creek discharges into: [none at this time]

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

Berkeley County discharges into:

- Ashley, Cooper, Wando, Charleston Harbor TMDL (DO),
- Sawmill Branch Dorchester Creek (FC),
- Wando River (FC)

City of Hanahan discharges into:

- Ashley, Cooper, Wando, Charleston Harbor TMDL (DO), but no WLA exists for non-point source/stormwater runoff

City of Goose Creek Discharges into:

- Ashley, Cooper, Wando, Charleston Harbor TMDL (DO), but no WLA exists for non-point source/stormwater runoff
- Sawmill Branch Dorchester Creek (FC)

2. Which of the TMDL pollutant(s) of concern listed above have the potential to occur within the MS4?

- Fecal Coliform

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

- Sawmill Branch Dorchester Creek (FC), *Berkeley County was not named as a contributor, nor was it assigned a WLA.*
- Wando River (FC) *Berkeley County was not named as a contributor, nor was it assigned a WLA.*

Research/Development

- Ashley, Cooper, Wando, Charleston Harbor TMDL (DO). *Berkeley County, Goose Creek, and Hanahan were not named as contributors, nor were they assigned a WLA.*
- Sawmill Branch Dorchester Creek (FC), Berkeley County nor Goose Creek were named as a contributor, nor was it assigned a WLA.

Implementation

4. Has the plan been submitted to the Department?

Yes

- City of Hanahan Monitoring & Assessment Plan is contained in Appendix C of 2018 SWMP
- City of Goose Creek Monitoring & Assessment Plan is contained in Appendix C of 2018 SWMP

No, target date for submission: _____

- Berkeley County does not currently have a Monitoring & Assessment Plan because no WLA has been developed to address a TMDL.

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:

Due to the fact that there are no TMDLs in the Goose Creek and Hanahan Urbanized Areas or into which the UAs drain, the current Monitoring & Assessment Plans for each city provides the standard operating procedures and protocols for potential monitoring. When any TMDLs are developed for the Cities or the County, then a more detailed TMDL-specific Monitoring & Assessment Plan will be developed for each. Monitoring will be 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 Plans for Hanahan and Goose Creek provide the standard operating procedures and protocols for potential monitoring and assessment implementation only.

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

When the Berkeley County SWMP was updated, the 2016 303(d) list was the most current list approved by the EPA. The previous Annual Report for Years 1-2 referenced the 2014 303(d) list. Since the previous report, one station has been removed from the list and three stations have been added.

Currently, 23 stations are listed for the Urbanized Areas in Berkeley County, Goose Creek, and Hanahan (RL-10104 is listed twice on the 2016 303(d) list, so the actual number of impaired stations is 22).

Many stations that were previously listed had revisions to the projected TMDL dates. These changes are reflected in Tables 4a, 4b and 4c of the SWMP, and summarized below.

Table 1: Location and Cause of Impaired Stations

DESCRIPTION	STATION	USE	CAUSE(S)	LOCATION
WASSAMASSAW SWP AT US 176	CSTL-063	REC	ECOLI	BC
DURHAM CK AT S-08-9 BRIDGE	MD-217	FISH	HG	BC
COOPER RIVER @ BUSHY PARK	MD-042	FISH	HG	BC
BACK RIVER RES IN FOREBAY EQUIDISTANT FROM DAM AND SHORELINES	CSTL-124	AL	DO	BC & GC
FOSTER CREEK AT CHARLESTON CPW WATER INTAKE	MD-240	AL	DO	BC & GC
TAIL RACE CANAL AT US 52 & 17A BELOW LAKE MOULTRIE (SC-033)	CSTL-062	FISH	HG	BC
GOOSE CK AT S-08-136 BRIDGE	MD-039	REC	ENTERO	BC & GC
GOOSE CK RES 2.3 M S OF GOOSE CREEK TOWN CENTER	RL-01008	AL	DO	BC, GC, HH
GOOSE CREEK RESERVOIR 1.0 MI NW OF SPILLWAY NEAR W SHORELINE	RL-03340	AL	CHLA, DO, TP	BC, GC, HH
GOOSE CREEK RESERVOIR 0.55 MI W OF DAM	RL-05412	AL	TP	BC, GC, HH
GOOSE CREEK RESERVOIR 2 MI N OF SPILLWAY	RL-06434	AL	DO	BC, GC, HH
GOOSE CK RESERVOIR 0.6 MI NW OF 2ND POWERLINES US OF BOAT RAMP, NEAR W SHORE BTWN 2 WESTERN EMBAYMENTS	RL-07017	AL	DO	BC, GC, HH
GOOSE CK RESERVOIR MIDLAKE IN LINE WITH NORTHBROOK BLVD	RL-08065	AL	DO, TP	BC, GC, HH
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	AL	CHLA, TP	BC, GC, HH
LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	REC	ECOLI	BC, GC, HH
LAKE, GOOSE CK RESERVOIR 2.5MI SW OF POPPENHEIM CROSSING	RL-10108	AL	CHLA, DO, TP	BC, GC, HH
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	AL	CHLA, PH, TP	BC, GC, HH
GOOSE CK RESERVOIR APPROX 250 YDS NW OF END OF HANAHAN RD	RL-13132	AL	PH, TP	BC, GC, HH
BERESFORD CREEK 5.3 MI NNE OF WANDO AND COOPER RIVER CONFLUENCE	RO-056092	AL	DO	BC
GOOSE CREEK RESERVOIR 100 M US OF DAM	ST-032	AL	CHLA, TP	BC, GC, HH
GOOSE CK RESERVOIR AT 2ND POWERLINES US OF BOAT RAMP	ST-033	AL	TP	BC, GC, HH
GOOSE CREEK RESERVOIR 2.8 MI NW OF SPILLWAY NEAR OTRANTO	RL-04390	AL	CHLA, DO, TP	BC, GC, HH
LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	AL	CHLA, DO, TP	BC, GC, HH

2. Which of the 303(d) pollutant(s) of concern listed above have the potential to occur within the MS4?

- Bacteria (FC, ENTERO and ECOLI)
- Total Phosphorus
- Chlorophyll-a

IV. 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.)

Websites

Berkeley County: <https://www.berkeleycountysc.gov/drupal/sites/default/files/Stormwater-Management-Ord-14-11-36.PDF>

Hanahan: <https://cityofhanahan.com/download/stormwater-ordinance/>

Goose Creek:

[http://library.amlegal.com/nxt/gateway.dll/South%20Carolina/goosecreek_sc/cityofgoosecreeksouthcarolinacodeofordinance?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:goosecreek_sc](http://library.amlegal.com/nxt/gateway.dll/South%20Carolina/goosecreek_sc/cityofgoosecreeksouthcarolinacodeofordinance?f=templates$fn=default.htm$3.0$vid=amlegal:goosecreek_sc)

Hard copy attached:

Please see Appendix D of the 2018 SWMP for the hard copies for the Stormwater Management Ordinances for the County, City of Hanahan, and Goose Creek.

B. Storm Water Management Plan (SWMP) (§4.1, 4.5)

(Answer the questions below about the SWMP for the current reporting year.)

1. Have you reviewed and updated the SWMP, including changes to any BMP or identified measureable goals that apply to the program elements (§4.5.1, 5.3.4, and Appendix B)?

Berkeley County has completed an annual review of the SWMP in conjunction with the preparation of the Annual Report for the County, City of Goose Creek, and the City of Hanahan. The updated SWMP is included in Appendix A. Appendix B includes items that were changed in the SWMP. In general, changes were made to Minimum Measure Permit Requirement tables to adjust wording for completed items for Berkeley County, City of Goose Creek, and City of Hanahan. Minimum Measure tables include the status of the milestones and updates to the measureable goals.

2. Has a summary of the stormwater activities you plan to undertake during the next reporting cycle been developed and updated (§5.3.3)?

Appendix D of the SWMP document contains the Implementation Schedule, including the deadlines for the MS4s associated with the SWMP.

3. 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): Berkeley County lost areas to City of Charleston, City of Summerville and City of Goose Creek due to annexation; the updated MS4 area maps are included in Appendix A of the SWMP.

Goose Creek MS4 has annexed portions of Berkeley County, but the area covered by Berkeley County MS4 has remained the same.

4. Are there any proposed changes to the goals or BMP (best management practices) in the SWMP?

No Yes (explain):

5. Do you have adequate resources to implement your SWMP?

Yes No (explain):

Berkeley County established a stormwater utility fee program that is generating monies to address MS4 compliance within the County and Cities of Hanahan and Goose Creek.

6. 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.

Berkeley County implemented a stormwater interim fee during the 2014/2015 fiscal year to help fund the Stormwater Management Program. In the years prior to Inter-Governmental Agreements (IGA) with the City of Goose Creek and the City of Hanahan, Berkeley County generated between \$1.5M - \$1.7M annually. With the recent IGAs the total utility revenues increased to \$2.2M - 2.5M annually. The County is in the process of adopting a permanent fee and rate structure. The adoption of permanent fee and rate structure will increase total revenue to approximately \$4.1M - \$4.2M annually. The additional revenue will be utilized to cover an expanding operation and maintenance program, focused on meeting requirements of MCM#5 & MCM#6. Additionally, there will be a focus on repair and replacement of municipally owned and maintained infrastructure. Since the inception of the stormwater utility, the County's revenues have exceeded the programs expenditures. The County has the necessary resources to complete the listed items in their SWMP and meet permit requirements of all permitted entities. A more detailed budget can be provided upon request.

Berkeley County currently has 14 employees in the engineering and stormwater departments whose jobs are directly related to the stormwater management program. The County currently has a request for 1 new position within the stormwater program whose job duties will be directly related to the stormwater management program. Additionally, Berkeley County currently has 33 employees in the roads & bridges program, whose jobs are directly related to the stormwater management program. The County currently has a request for an additional 7 new positions within the roads and bridges program, whose job duties will be directly related to the stormwater management program. The County has the resources, both with staffing and funding, to carry out the tasks described in their SWMP. All aforementioned staff and resources

are utilized in meeting the requirements for each permitted entity. More information can be provided upon request.

7. 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):

Table 2: Summary of Training

Date	Topics Covered
varies	CEPSCI training
5/28/17-6/2/17	In-house training on IDDE tracking and identification; good housekeeping;
7/20/17	Good housekeeping webinar

v. 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)

Through the IGA with City of Hanahan and City of Goose Creek, Berkeley County is responsible for MCMs 1-6 for all three entities.

Table 3: Berkeley County Responsibilities:

MCM 1	Ashley Cooper Stormwater Education Consortium (ACSEC)
MCM 2	Ashley Cooper Stormwater Education Consortium (ACSEC)
MCM 3	Berkeley County, per IGA
MCM 4	Berkeley County, per IGA
MCM 5	Berkeley County, per IGA
MCM 6	Berkeley County, per IGA

Table 4: City of Goose Creek Responsibilities:

MCM 1	Responsibility was transferred to Berkeley County via an IGA dated 15 October 2015
MCM 2	Responsibility was transferred to Berkeley County via an IGA dated 15 October 2015
MCM 3	Responsibility was transferred to Berkeley County via an IGA dated 15 October 2015
MCM 4	Responsibility was transferred to Berkeley County via an IGA dated 15 October 2015
MCM 5	Responsibility was transferred to Berkeley County via an IGA dated 15 October 2015

MCM 6	Responsibility was transferred to Berkeley County via an IGA dated 15 October 2015
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Table 5: City of Hanahan Responsibilities:

MCM 1	Responsibility was transferred to Berkeley County via an IGA dated 3 November 2015
MCM 2	Responsibility was transferred to Berkeley County via an IGA dated 3 November 2015
MCM 3	Responsibility was transferred to Berkeley County via an IGA dated 3 November 2015
MCM 4	Responsibility was transferred to Berkeley County via an IGA dated 3 November 2015
MCM 5	Responsibility was transferred to Berkeley County via an IGA dated 3 November 2015
MCM 6	Responsibility was transferred to Berkeley County via an IGA dated 3 November 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)*

The IGAs between Berkeley County, City of Hanahan, and City of Goose Creek are included in Appendix H of the SWMP (Appendix A of this Annual Report) and were submitted to the Department in the Year 1-2 NPDES Annual Report.

An agreement with ACSEC included in Appendix G of the Stormwater Management Plan (updated in 2018). This was also submitted with the first annual report (2014-2015).

3. If applicable, provide the date of submission of the agreement(s) to the Department:

- IGA with Hanahan (October 9, 2015) submitted with previous Annual Report (2014-2015) in April of 2016;
- IGA Gosse Creek (October 15, 2015) submitted with previous Annual Report (2014-2015) in April of 2016;
- MOU with Clemson (November 28, 2016) submitted with this Report in Appendix G of the Stormwater Management Plan

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. Minimum Control Measure 1: Public Education and Outreach on Storm Water Impacts (§4.2.1, 5.3)

1. 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.

As a result of the IGA between Berkeley County, City of Goose Creek, and the City of Hanahan, the County has committed to implementing, managing, and maintaining a partnership with the Ashley Cooper Stormwater Education Consortium. This partnership is contracted through 2021 with Clemson’s Carolina Clear program as necessary to satisfy NPDES MS4 permit requirements for Public Education and Outreach.

See ACSEC Annual Report of Activities for 2016 and 2017 in Appendix E of this Annual Report; please note that the numbers presented by the ACSEC report are for the Charleston tri-county area, and are not specific to Berkeley County, City of Hanahan, and City of Goose Creek.

Pollutants of concern were divided into two priority areas:

- Residential Audience Priorities
 - Home landscaping nutrient management
 - Residential stormwater pond management
 - Bacteria management
- Commercial Audience Priorities
 - Landscapers and pond management company nutrient management
 - Restaurants and hospitality fats, oils, and grease management
 - Automotive business oil, grease, and hazardous fluids management

ACSEC utilized several outreach techniques to address these priorities, including:

- Indirect Outreach Methods such as internet; television; publications; outreach materials; permanent exhibits; and public events (fairs and festivals).
- Direct Outreach Methods such as direct contacts; presentations; youth presentations; workshops; trainings and certifications; and conferences.

In addition to efforts through Carolina Clear, Berkeley County also provides public education and outreach through its Facebook page and in partnership with Keep Berkeley Beautiful. More information can be found at the following links:

<http://www.bcwsa.com/keep-berkeley-beautiful>

<https://www.facebook.com/KeepBerkeleyBeautiful/>

<https://www.facebook.com/BCSTORMWATER/>

Control Measure 1 Evaluation (§5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule:

ACSEC programming priorities were identified and developed through the ACSEC Outreach Strategic Plan 2012-2017. 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. ACSEC established education timelines (as included in the Reports for 2016 and 2017 in Appendix E of this Annual Report) that correlated with requirements in the implementation schedule (found in Appendix D of this Annual Report).

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives:

As Berkeley County, City of Hanahan and City of Goose Creek continue to grow and develop, public education and outreach will continue to grow and evolve. The ACSEC Strategic Plan allows for the flexibility to refine and supplement regional efforts as needed to address these changes. Berkeley County will continue to participate in ACSEC activities in order to ensure that the County and Cities will achieve the necessary goals for this Control Measure.

The currently implemented program appears to be reaching all targeted audiences and meeting the requirements within the SWMP. At this time, Berkeley County intends to continue the contract with CUCES/Ashley Cooper Stormwater Education Consortium.

C. Minimum Control Measure 2: Public Involvement/Participation (§4.2.2, 5.3)

1. How can the public find information about the SWMP?

Berkeley County, City of Hanahan, and City of Goose Creek use the same SWMP, and it is referenced on the Berkeley County stormwater webpage:

<https://www.berkeleycountysc.gov/drupal/engineering/storm>

2. 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.

As a result of the IGA between Berkeley County, City of Goose Creek, and the City of Hanahan, the County has committed to implementing, managing, and maintaining a partnership with the Ashley Cooper Stormwater Education Consortium. This partnership is contracted through Clemson’s Carolina Clear program as necessary to satisfy NPDES MS4 permit requirements for Public Involvement.

See ACSEC Annual Report of Activities 2016, 2017; and the contract has continued until 2021. Information included as part of Appendix E; please note that the numbers presented by the ACSEC report are for the Charleston tri-county area, and are not specific to Berkeley County, City of Hanahan, and City of Goose Creek.

ACSEC utilized a variety of methods for public involvement, including:

- storm drain marking
- litter sweeps
- oyster reef construction
- rain barrel sales
- native plant sales
- salt marsh buffer installation
- pet waste bag dispenser programs
- boater pump out program
- youth involvement events

Control Measure 2 Evaluation (§5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule:

ACSEC programming priorities were identified and developed through the ACSEC Outreach Strategic Plan 2012-2017. 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. ACSEC established education timelines (as included in the Reports for 2016 and 2017 in

Appendix E of this Annual Report) that correlated with requirements in the implementation schedule (found in Appendix D of this Annual Report).

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives:

As Berkeley County, City of Hanahan and City of Goose Creek continue to grow and develop, the involvement and participation of the public will continue to grow and evolve. The ACSEC Strategic Plan allows for the flexibility to refine and supplement regional efforts as needed to address these changes. Berkeley County will continue to participate in ACSEC activities in order to ensure that the County and Cities will achieve the necessary goals for this Control Measure.

The currently implemented program appears to be reaching all targeted audiences and meeting the requirements within the SWMP. At this time, Berkeley County intends to continue the contract with CUCES/Ashley Cooper Stormwater Education Consortium.

D. 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?

The public – within the County, City of Hanahan or City of Goose Creek – can call, email or post messages on both the Facebook page and on the stormwater department webpage. Additionally, the City of Hanahan stormwater webpage redirects the public to all the following County contact information. Currently, the City of Goose Creek staff handle all forwarding of complaints from the public to the below County contact information.

- (843) 719-4195
- webswmp@berkeleycountysc.gov
- <https://www.facebook.com/BCSTORMWATER/>
- <https://berkeleycountysc.gov/drupal/engineering/storm>

2. Complete the list below for the last reporting year:

- Total number of suspected illicit discharges: **25**
- Total number of illicit discharges found: **25**
- Number of illicit discharges with enforcement escalation (action taken beyond written warning): **none**
- Total number of illicit discharges eliminated: **25**

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.

Table 6: Summary of Priority Areas

Priority Areas	Rationale for Selection	Changed within last reporting year? <i>(If so, provide an explanation.)</i>
<p>1. Municipally-owned and/or operated facilities with “hot spot” activities such as vehicle maintenance, storage areas, etc.</p>	<p>Various facilities store refuse, chemicals and other potentially harmful substances. The County has moved several facilities out of proximity of downstream waterbodies, and will continue to audit these sites and train staff on proper disposal of potentially hazardous materials.</p>	<p>Yes, this reflects a consolidation of Priority Areas for Berkeley County, City of Goose Creek and City of Hanahan. The new list was compiled in an effort to effectively and efficiently assess each MS4’s concerns.</p>
<p>2. Known areas with repetitive, historical illicit discharges</p>	<p>All identified illicit discharges have been tracked and eliminated at their source within the municipal city limits and unincorporated MS4 boundaries. In the event that the County becomes aware of a reoccurrence of illicit discharges, the site will be inspected in accordance with the “Standard Operating Procedures for Use in Field Investigations for Illicit Discharges”</p>	<p>Yes, this reflects a consolidation of Priority Areas for Berkeley County, City of Goose Creek and City of Hanahan. The new list was compiled in an effort to effectively and efficiently assess each MS4’s concerns.</p>
<p>3. Known areas with a history of illegal dumping</p>	<p>There are currently no areas within the municipal city limits or the unincorporated County MS4 boundaries that have a history of repetitive illegal dumping activities. In the event that the County becomes aware of reoccurrence of illegal dumping activities in a particular portion of each MS4, these sites will be inspected in accordance with “Standard Operating Procedures for Use in Field Investigations for Illicit Discharges”</p>	<p>Yes, this reflects a consolidation of Priority Areas for Berkeley County, City of Goose Creek and City of Hanahan. The new list was compiled in an effort to effectively and efficiently assess each MS4’s concerns.</p>
<p>4. Known areas with older sewer lines, history of sanitary sewer overflows (SSOs) or known cross-connections</p>	<p>There are currently no areas within the municipal city limits or the unincorporated County MS4 boundaries that have a history of repetitive SSOs, cross-connection pipes, or repetitive malfunctioning septic systems. The County coordinates with Berkeley County Water and Sanitation, Berkeley County Codes Enforcement, and SCDHEC regarding these issues.</p>	<p>Yes, this reflects a consolidation of Priority Areas for Berkeley County, City of Goose Creek and City of Hanahan. The new list was compiled in an effort to effectively and efficiently assess each MS4’s concerns.</p>

5. Areas thought to be causative of pollutants of concern (POC) upstream to sensitive waterbodies and/or impaired monitoring stations	The 2016 303(d) list contains 20 impaired stations within the County's and Cities' MS4 jurisdiction. Additionally, there are three sensitive water stations (SFH classification) and three developed and approved TMDLs within each MS4 area.	Yes, this reflects a consolidation of Priority Areas for Berkeley County, City of Goose Creek and City of Hanahan. The new list was compiled in an effort to effectively and efficiently assess each MS4's concerns.
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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.

Table 7: Summary of IDDE Action Items, Goals, and Progress

IDDE Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>
Field Screening	Assign a lead to coordinate IDDE program and associated field screening activities	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	2014 - Staff were appropriately assigned to the role of management and oversight for the IDDE program and its associated field activities.
Field Screening	Develop hard copy map books with relevant infrastructure, land use, and water resources information for field screening	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	2015 – A hard copy map book with relevant infrastructure, land use, and water resource information for field screening activities was created for in-field use. Additionally, all data currently exist in ArcGIS database and is continually updated and added to for both electronic and hard copy versions.
Field Screening	Prioritize areas within sub-watersheds for field screening	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Five (5) Priority Areas were established in 2017, as described in Table 6
Field Screening	Conduct Self-Assessment	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	The IDDE Field Screening Self-Assessment was completed in October 2017.
Field Screening	Dedicate funding mechanisms specifically towards field screening activities.	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	In the 2014-2015 Fiscal Year, Berkeley County implemented a stormwater management utility and established stormwater management utility fees to help fund implementation of stormwater programs.

Control Measure 3 Evaluation (§5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule:

The County, City of Goose Creek and City of Hanahan have achieved all goals for this MCM by identifying & updating priority areas and developing storm system map.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives:

Berkeley County just updated a Field Screening Assessment in 2017 for the County, City of Hanahan, and City of Goose Creek. The following action items were identified for improvement to the IDDE program:

Action Items for Next 1 – 5 Years:

1. Equipment- the stormwater program should invest in owned supplies such as back packs, measuring tapes, water quality monitoring equipment, and etc.
2. Pollution Prevention- storm drain stenciling should become a widespread effort.

Action Items for Next 5 – 10 Years:

1. Legal Authority- An up-to-date shared tracking system for all agency access.
2. Mapping Resources- Portable GIS/EAM equipped notepads available for field screening.
3. Mapping Resources- Map known septic systems.
4. Mapping Resources- Complete a GIS desktop assessment to identify areas of potential illicit discharges for future field screenings.
5. Staff Capacity- Require confined space entry training for staff.
6. Equipment- obtain smoke testing equipment and dye injection equipment.
7. Education & Outreach- develop real-time reporting tools (smart phone app) for public use.
8. Discharge Removal Capability – equip staff with appropriate tools and training to eliminate illicit connections identified during field screenings.
9. Program Budget & Finances- explore cost sharing arrangements with other entities when specific illicit discharges are identified via field screening efforts.
10. Program Budget & Finances- explore grant opportunities for field screening efforts.
11. Pollution Prevention- prioritize areas via known NPDES facilities, hotspot businesses, and age of infrastructure. Then conduct a comprehensive assessment utilizing prioritized locations.
12. Pollution Prevention- utilize storm drain plugs to combat illicit discharges.

E. 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?

The public – within the County, City of Hanahan or City of Goose Creek – can call, email or post messages on both the Facebook page and on the stormwater department webpage. Additionally, the City of Hanahan stormwater webpage redirects the public to all the following County contact information. Currently, the City of Goose Creek staff handle all forwarding of complaints from the public to the below County contact information.

- (843) 719-4195
- webswmp@berkeleycountysc.gov
- <https://www.facebook.com/BCSTORMWATER/>
- <https://berkeleycountysc.gov/drupal/engineering/storm>

2. How does the MS4 communicate with construction operators to ensure understanding of requirements and improvements that may be needed?

The County utilizes constructor operator training via on-site pre-construction meetings. Additionally, through all subsequent inspections by Berkeley County Staff, construction operators are educated and trained on proper site construction practices as it pertains to stormwater, BMP, and erosion control practices.

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: **TOTAL = 588** (BC = 513; GC = 52; HH = 23)
- Total number of active construction sites: **TOTAL = 245** (BC = 208; GC = 15; HH = 7)
- Total number of inspections performed: **TOTAL = 3,791** (BC = 3,316; GC = 377; HH = 98)
- Number of sites with unsatisfactory/noncompliant inspection results: **TOTAL = 125** (BC = 119; GC = 3; HH = 3)
- Number of sites with enforcement escalation (action taken beyond written warning): **TOTAL = 0**
- Number of sites inspected past the deadline specified in the permit: **TOTAL = 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.

Table 8: Summary of Construction Site Action Items, Goals, and Progress

Construction Site Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>
Erosion Prevention and Sedimentation Control	Provide a tool to assist construction site operators to implement appropriate EPSC BMPs	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	January 1, 2014 – All construction site operators are provided education and training via pre-construction meetings and subsequently throughout the inspection process, and if necessary enforcement process. Additionally, materials and documentation for proper implementation of EPSC BMPs are provided on the County website.
Pollution Prevention	Provide a tool to assist construction site operators to implement appropriate Pollution Prevention BMPs	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	January 1, 2014- All construction site operators are provided education and training via pre-construction meetings and subsequently throughout the inspection process, and if necessary enforcement process. Additionally, materials and documentation for proper implementation of Pollution Prevention BMPs are provided on the County website.
Pollution Prevention	Update Stormwater Design Standards Manual	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	The manual is currently being updated (summer 2018) to require EPSC plans to contain all components of a Stormwater Pollution Prevention Plan as outlined by SCDHEC and the most current Construction General Permit (CGP).
Update Plan Review Procedures	Review and update plan review procedures to ensure compliance with Stormwater Design Standards Manual	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Plan review procedures will be updated concurrently with the Design Standards Manual in summer 2018.
Develop Construction Site and Site Inspection Inventory	Develop a database for construction sites	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	The database, EnerGOV, is updated annually to reflect inspection inventory.
Update site inspection procedures	Update County Stormwater Design Standards Manual	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Inspection requirements will be updated in summer 2018 to refer to guidance in <i>Low Impact Development in Coastal South Carolina</i> and add requirements for stormwater video inspections.
Develop section of Enforcement Response Plan (ERP) for Construction Activities	Develop ERP that clearly identifies types of violations, responses to violations, and enforcement measures	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Section III. As of December 2014, ERPs contain descriptions of violations related to construction activities. Currently all three entities have ERPs developed for their respective SWMP ordinance.
Update Stormwater Management Ordinance	Update ordinance to provide authority to meet and enforce criteria of this MCM	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	In November 2014, the Berkeley County Ordinance was amended to establish regulations to develop and enforce a Stormwater Management Program. Additionally, both Goose Creek and Hanahan established stormwater management ordinances in 2014.

Train MS4 Staff	Train staff whose primary duties are related to implementing the construction stormwater program	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Staff training is a continuous process and is integrated into yearly programming.
Develop Construction Site Operator Education	Implement an effective communication process with construction contractors	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Annually- All construction site operators are provided an avenue for effective communication via pre-construction meetings and subsequently throughout the inspection process, and if necessary enforcement process. Additionally, all construction site operator information is collected prior to construction and updated periodically via phone and email.
Develop Public Involvement Procedures	Implement procedures for receipt and consideration of information submitted by the public	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Starting in January 2016, citizens can call, email or post messages on both the Facebook page and on the stormwater department webpage. Additionally, complaint forms are available to the public via Facebook and the webpage.

Control Measure 4 Evaluation (§5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule:

The County has completed every requirement for this permit; annual items are ongoing.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives:

The County has plans to continue updates to in-house procedures utilizing EnerGOV system, SOP, etc.

F. 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: **TOTAL = 66** (BC = 47; GC = 15, HH = 4)
- Number of inspections performed within 30 days of construction completion: **TOTAL = 66** (BC = 47; GC = 15, HH = 4)
- Total number of inspections performed: **TOTAL = 77** (BC = 57; GC = 15, HH = 4)
- Number of sites with unsatisfactory/noncompliant inspection results: **TOTAL = 0**
- Number of sites with enforcement escalation (action taken beyond written warning): **TOTAL = 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.

Table 9: Summary of Post-Construction Action Items, Goals, and Progress

Post-Construction Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>
Develop Water Quality Design Requirements	Provide design community with design guidance for post-construction BMPs	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Berkeley County’s Stormwater Design Standards Manual was updated in September 2014. This document addresses post-construction requirements.
Develop Site Performance Standards	Provide design community with performance and design standards for post-construction BMPs	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Berkeley County’s Stormwater Design Standards Manual will be updated in summer 2018 and addresses performance and design standards for post-construction BMPs.
Revise Plan Review Checklist for Post-Construction SWP3 Submittal Requirements	Develop SWP3 requirements for post-construction site performance standards	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Berkeley County’s Stormwater Design Standards Manual will be updated in summer 2018 and includes a requirement to include all components of a SWP3 as outlined by SCDHEC and the most current CGP.
Develop Long-Term Maintenance Requirements for Post-Construction BMPs	Develop a post-construction BMP maintenance agreement form and post-construction BMP maintenance verification form	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	In 2008 Berkeley County adopted Covenants for Permanent Maintenance of Stormwater Systems and this is included in Appendix B of the Design Standards Manual.
Post-Construction BMP Inventory	Develop an inventory of County permitted post-construction BMPs	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	The County has an inventory of all County permitted post-construction BMPs constructed since January 1, 2014. This information is stored in the County’s project management system, EnerGov and is updated as needed.
Post-Construction BMP Inspections Program	Develop procedures and forms for post-construction BMP installation inspections	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Procedures and forms have existed since January 1, 2014 within the County’s project management system, EnerGov, and are updated as necessary
Post-Construction BMP Inspections Program	Inspect all County permitted post-construction BMPs within 30 days of construction completion	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Since January 2014, the County has been performing inspections and recording them within the project management system, EnerGov.
Post-Construction BMP Inspections Program	Develop procedures and forms for post-construction BMP inspections	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Procedures and forms have existed since January 1, 2014 within the County’s project management system, EnerGov, and are updated as necessary
Post-Construction BMP Inspections Program	Inspect appropriate construction sites to ensure County permitted post-construction BMPs are maintained and operating properly	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Since January 1, 2014 all newly constructed sites utilizing County permitted post-construction BMPs are inspected annually to ensure proper maintenance and operation. All sites are tracked through the County’s project management system, EnerGov.
Post-Construction BMP Inspections Program	Provide documentation of Post-Construction BMP inspections	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Since January 2014, the County has been documenting inspections and recording them within the project management system, EnerGov.

Control Measure 5 Evaluation (§5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule:

The County has conducted all post-construction inspections on BMPs and has updated EnerGov system to correct minor deficiency from human error.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives:

The County will continue to update in-house procedures utilizing the EnerGov system, Standard Operating Procedures, etc.

G. 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.

Table 10: Summary of Municipal Facility Pollution Prevention Action Items, Goals, and Progress

Pollution Prevention Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>
Municipal Facility Inventory	Inventory non-permitted municipal facilities	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	January 2015 - An inventory of non-permitted municipal facilities was completed for each entity and stored in an Excel spreadsheet. The list is updated as facilities are added or removed.
Municipal Facility Inventory	List all municipally-owned facilities that are covered under a separate NPDES permit for industrial activities	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	January 2015- An inventory of municipal-owned facilities covered under separate NPDES permits was completed for each and stored in an Excel spreadsheet. The list is updated as facilities are added or removed.
Assessment of Non-Permitted Municipal Facilities	Conduct analysis to identify potential high-priority facilities	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	July 2015 – An analysis to identify potential high priority facilities, utilizing a comprehensive list of all county and city owned municipal facilities and any activities which might harm the water quality of stormwater runoff was conducted to create a list of high priority facilities for each entity.
Assessment of Non-Permitted Municipal Facilities	Create site evaluation checklist for facility assessment	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	July 2015 – A site evaluation checklist was created to use during facility inspection and high priority municipal facilities were listed.
Assessment of Non-Permitted Municipal Facilities	Conduct inspections at municipal facilities and complete evaluation checklist	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	July 2015 – Inspections of high priority facilities were conducted in 2015 for each entity. A high priority inspection checklist created specifically for high priority facility inspections was utilized to assess each facility.
Assessment of Non-Permitted Municipal Facilities	Document site evaluation checklists	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	High priority facilities documented in 2015, via a checklist, were documented along with the checklist evaluation within Berkeley County records.
Assessment of Non-Permitted Municipal Facilities	List high priority facilities	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	January 2017- A list of high priority facilities was updated for each entity in the form of an excel sheet and is updated annually through additions or subtractions to and from the lists.
Conduct High Priority Facility Inspections	Create high priority inspection form	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	January 2015 – A high priority inspection form was created and is used during facility inspections.
Conduct High Priority Facility Inspections	Conduct annual inspections and determine potential pollution generating areas	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Annually – High priority facility inspections are conducted for each entity utilizing a high priority inspection form.
Conduct High Priority Facility Inspections	Document facility inspection report forms	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Annually – High priority inspections completed in 2016 & 2017 for each entity were documented and are included in the Berkeley County Facility Inspection reports.

Prioritization of Stormwater Management Systems/Structures	Create a maintenance schedule based on the prioritization of the stormwater management systems/structures	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	The County developed a maintenance schedule for County owned/maintained systems/structures within the County in 2016. The priority ranking scale is developed within the Good Housekeeping Manual that was developed in 2011 and Revised in 2018.
Review and Update Pollution Prevention Measures for Operation and Maintenance Activities	Create a set of pollution prevention measures for municipal operation and maintenance activities	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	The County developed a set of pollution prevention measures for municipal operation and maintenance activities within the Good Housekeeping Manual that was developed in 2011 and Revised in 2018.
Inspect and Maintain County Owned Structural Controls	Conduct inspections and perform maintenance	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Berkeley County will continue to inspect and maintain, wherever and whenever necessary, all County owned or maintained structural stormwater controls.
Pollution Prevention and Good Housekeeping Employee Training	Conduct employee training	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Berkeley County will continue to 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 current Good Housekeeping Manual.

Control Measure 6 Evaluation (§5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule:

The County has implemented and successfully completed all requirements for Pollution Prevention/Good Housekeeping, according to the implementation schedule.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives:

Moving forward, the County will be focusing on the tracking component of infrastructure/replacement/life cycle and integrating that information into Electronic Asset Management software to track for the County, Hanahan, and Goose Creek.

Annual Report Appendix A: Stormwater Management Plan (SWMP)



**Berkeley County
City of Goose Creek
City of Hanahan**

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 June 12, 2018

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.

William W. Peagler III

Name (Print)



Signature

County Supervisor

Title

6.18.18

Date

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- 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, Goose Creek and Hanahan NPDES Stormwater Management Program (SWMP)

1.0 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 was 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 each government that conduct stormwater-related activities. For Berkeley County, these departments include:

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

For Goose Creek, these departments include:

- Codes Enforcement
- Planning, Engineering
- Facilities & Grounds.

For Hanahan, these departments include:

- Codes Enforcement
- Planning
- Facilities & Grounds.

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 is responsible for the items stated in the agreements (located in Appendix H) and will continue to provide the services stated in those agreements. In the second reporting period (2016-2017), Berkeley County updated this SWMP to address these additional municipalities.

2.0 Notice of Intent (NOI) Information

Notice of Intent information has been provided in three separate tables for Berkeley County, the City of Goose Creek, and the City of Hanahan.

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

General Permit Section	NOI Requirement	Description
2.2.2.4	List of Entities within the City of Goose Creek'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 City of Goose Creek.
2.2.2.5	Other Governmental Entities:	<p>Responsibility for all of the City's permit obligations associated with all applicable BMPs was transferred to Berkeley County via an IGA dated 15 October, 2015. These include:</p> <ul style="list-style-type: none"> • MCM 1: Public Education and Outreach • MCM 2: Public Involvement and Participation • MCM 3: Illicit Discharge Detection and Elimination • MCM 4: Construction Site Stormwater Runoff Control • MCM 5: Post-Construction Stormwater Management • MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations
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

General Permit Section	NOI Requirement	Description
2.2.2.4	List of Entities within the City of Hanahan'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 City of Hanahan.
2.2.2.5	Other Governmental Entities:	<p>Responsibility for all of the City's permit obligations associated with all applicable BMPs was transferred to Berkeley County via an IGA dated 3 November, 2015. These include:</p> <ul style="list-style-type: none"> • MCM 1: Public Education and Outreach • MCM 2: Public Involvement and Participation • MCM 3: Illicit Discharge Detection and Elimination • MCM 4: Construction Site Stormwater Runoff Control • MCM 5: Post-Construction Stormwater Management • MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations
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

3.0 Special Conditions Applicable to Permitted Stormwater Discharges to Sensitive Waters

The SMS4 general permit requires that Berkeley County, City of Goose Creek and City of Hanahan determine whether their 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).

3.1 Determination of Receiving Water Conditions and Impacts

The SMS4 general permit requires Berkeley County, City of Goose Creek and City of Hanahan 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 the SMS4 urbanized areas for Berkeley County, City of Goose Creek and City of Hanahan. Tables 4 and 5 in the sections below provide a list of approved TMDLs and the impaired waterbodies on the 2016 303(d) list that Berkeley County's SMS4 contributes to, either directly or indirectly.

3.2 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 the regulated MS4 area for Berkeley County, Goose Creek, and Hanahan, and/or which these MS4 areas drain to, can be found in Tables 4a, 4b, and 4c. Berkeley County, Goose Creek and Hanahan were not named as a contributor and were not assigned a wasteload allocation in any of the TMDLs listed in Table 4a, 4b, or 4c.

Table 4a: Approved TMDLs within Berkeley County's Regulated MS4 Area

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	2016

Table 4b: Approved TMDLs within the City of Goose Creek's Regulated MS4 Area

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

Table 4c: Approved TMDLs within the City of Hanahan's Regulated MS4 Area

TMDL Watershed	Pollutant of Concern	Monitoring Stations	Effective Date
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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)

3.3 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.

3.4 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 Tables 5a, 5b, and 5c below.

Table 5a: 2016 303(d) List of Impaired Stations within Berkeley County's SMS4 Area and/or that the SMS4 Area Drains Into

PRIORITY RANK [‡]	HUC-12	DESCRIPTION	STATION	CAUSE
3	030502010701	TAIL RACE CANAL AT US 52 & 17A BELOW LAKE MOULTRIE (SC-033)	CSTL-062	HG
3	030502010503	WASSAMASSAW SWP AT US 176	CSTL-063*	ECOLI
3	030502010704	BACK RIVER RES IN FOREBAY EQUIDISTANT FROM DAM AND SHORELINES	CSTL-124	DO
3	030502010706	GOOSE CK AT S-08-136 BRIDGE	MD-039	ENTERO
3	030502010704	COOPER RIVER @ BUSHY PARK	MD-042	HG
3	030502010704	DURHAM CK AT S-08-9 BRIDGE	MD-217	HG
3	030502010703	FOSTER CREEK AT CHARLESTON CPW WATER INTAKE	MD-240	DO
2	030502010706	GOOSE CK RES 2.3 M S OF GOOSE CREEK TOWN CENTER	RL-01008	DO

PRIORITY RANK‡	HUC-12	DESCRIPTION	STATION	CAUSE
2	030502010706	GOOSE CREEK RESERVOIR 1.0 MI NW OF SPILLWAY NEAR W SHORELINE	RL-03340	CHLA, DO, TP†
2	030502010706	GOOSE CREEK RESERVOIR 2.8 MI NW OF SPILLWAY NEAR OTRANTO	RL-04390	CHLA, DO, TP
2	030502010706	GOOSE CREEK RESERVOIR 0.55 MI W OF DAM	RL-05412	TP
2	030502010706	GOOSE CREEK RESERVOIR 2 MI N OF SPILLWAY	RL-06434	DO
2	030502010706	GOOSE CK RESERVOIR 0.6 MI NW OF 2ND POWERLINES US OF BOAT RAMP, NEAR W SHORE BTWN 2 WESTERN EMBAYMENTS	RL-07017	DO
2	030502010706	GOOSE CK RESERVOIR MIDLAKE IN LINE WITH NORTHBROOK BLVD	RL-08065	DO, TP
2	030502010706	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
3	030502010706	LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	ECOLI
2	030502010706	LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	CHLA, DO, TP
2	030502010706	LAKE, GOOSE CK RESERVOIR 2.5MI SW OF POPPENHEIM CROSSING	RL-10108	CHLA, DO, TP
2	030502010706	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
2	030502010706	GOOSE CK RESERVOIR APPROX 250 YDS NW OF END OF HANAHAN RD	RL-13132*	PH, TP
3	030502010402	BERESFORD CREEK 5.3 MI NNE OF WANDO AND COOPER RIVER CONFLUENCE	RO-056092*	DO
2	030502010706	GOOSE CREEK RESERVOIR 100 M US OF DAM	ST-032	CHLA, TP
2	030502010706	GOOSE CK RESERVOIR AT 2ND POWERLINES US OF BOAT RAMP	ST-033	TP

‡ Priority Rank 2: TMDL to be implemented between 2019-2022

‡ Priority Rank 3: TMDL to be implemented after 2022

*Denotes station added to the 2016 303(d) list

†Denotes change in pollutant of concern from 2014 303(d) list

Table 5b: 2016 303(d) List of Impaired Stations within the City of Goose Creek's SMS4 Area and/or that the SMS4 Area Drains Into

PRIORITY RANK‡	HUC-12	DESCRIPTION	STATION	CAUSE
3	030502010706	GOOSE CK AT S-08-136 BRIDGE	MD-039	ENTERO
2	030502010706	GOOSE CK RES 2.3 M S OF GOOSE CREEK TOWN CENTER	RL-01008	DO
2	030502010706	GOOSE CREEK RESERVOIR 1.0 MI NW OF SPILLWAY NEAR W SHORELINE	RL-03340	CHLA, DO, TP†
2	030502010706	GOOSE CREEK RESERVOIR 2.8 MI NW OF SPILLWAY NEAR OTRANTO	RL-04390	CHLA, DO, TP
2	030502010706	GOOSE CREEK RESERVOIR 0.55 MI W OF DAM	RL-05412	TP
2	030502010706	GOOSE CREEK RESERVOIR 2 MI N OF SPILLWAY	RL-06434	DO
2	030502010706	GOOSE CK RESERVOIR 0.6 MI NW OF 2ND POWERLINES US OF BOAT RAMP, NEAR W SHORE BTWN 2 WESTERN EMBAYMENTS	RL-07017	DO
2	030502010706	GOOSE CK RESERVOIR MIDLAKE IN LINE WITH NORTHBROOK BLVD	RL-08065	DO, TP
2	030502010706	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
3	030502010706	LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	ECOLI
2	030502010706	LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	CHLA, DO, TP
2	030502010706	LAKE, GOOSE CK RESERVOIR 2.5MI SW OF POPPENHEIM CROSSING	RL-10108	CHLA, DO, TP
2	030502010706	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
2	030502010706	GOOSE CK RESERVOIR APPROX 250 YDS NW OF END OF HANAHAN RD	RL-13132*	PH, TP
2	030502010706	GOOSE CREEK RESERVOIR 100 M US OF DAM	ST-032	CHLA, TP
2	030502010706	GOOSE CK RESERVOIR AT 2ND POWERLINES US OF BOAT RAMP	ST-033	TP

‡ Priority Rank 2: TMDL to be implemented between 2019-2022

‡ Priority Rank 3: TMDL to be implemented after 2022

*Denotes station added to the 2016 303(d) list

†Denotes change in pollutant of concern from 2014 303(d) list

Table 5c: 2016 303(d) List of Impaired Stations within the City of Hanahan's SMS4 Area and/or that the SMS4 Area Drains Into

PRIORITY RANK‡	HUC-12	DESCRIPTION	STATION	CAUSE
3	030502010706	GOOSE CK AT S-08-136 BRIDGE	MD-039	ENTERO
2	030502010706	GOOSE CK RES 2.3 M S OF GOOSE CREEK TOWN CENTER	RL-01008	DO
2	030502010706	GOOSE CREEK RESERVOIR 1.0 MI NW OF SPILLWAY NEAR W SHORELINE	RL-03340	CHLA, DO, TP†
2	030502010706	GOOSE CREEK RESERVOIR 2.8 MI NW OF SPILLWAY NEAR OTRANTO	RL-04390	CHLA, DO, TP
2	030502010706	GOOSE CREEK RESERVOIR 0.55 MI W OF DAM	RL-05412	TP
2	030502010706	GOOSE CREEK RESERVOIR 2 MI N OF SPILLWAY	RL-06434	DO
2	030502010706	GOOSE CK RESERVOIR 0.6 MI NW OF 2ND POWERLINES US OF BOAT RAMP, NEAR W SHORE BTWN 2 WESTERN EMBAYMENTS	RL-07017	DO
2	030502010706	GOOSE CK RESERVOIR MIDLAKE IN LINE WITH NORTHBROOK BLVD	RL-08065	DO, TP
2	030502010706	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
3	030502010706	LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	ECOLI
2	030502010706	LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	CHLA, DO, TP
2	030502010706	LAKE, GOOSE CK RESERVOIR 2.5MI SW OF POPPENHEIM CROSSING	RL-10108	CHLA, DO, TP
2	030502010706	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
2	030502010706	GOOSE CK RESERVOIR APPROX 250 YDS NW OF END OF HANAHAN RD	RL-13132*	PH, TP
2	030502010706	GOOSE CREEK RESERVOIR 100 M US OF DAM	ST-032	CHLA, TP
2	030502010706	GOOSE CK RESERVOIR AT 2ND POWERLINES US OF BOAT RAMP	ST-033	TP

‡ Priority Rank 2: TMDL to be implemented between 2019-2022

‡ Priority Rank 3: TMDL to be implemented after 2022

*Denotes station added to the 2016 303(d) list

†Denotes change in pollutant of concern from 2014 303(d) list

3.5 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. Lists of Classified Waters in Berkeley County, Goose Creek, and Hanahan are provided in the tables below.

Table 6a: Discharges to Classified Waters in Berkeley County MS4

Waterbody	Water Quality Classification	Description
Fogarty 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
Beresfords Creek	SFH	The section of creek tributary between Nobles Creek and Nowell Creek
Martin Creek	SFH	The entire creek tributary to Beresfords Creek

Table 6b: Discharges to Classified Waters in Goose Creek MS4

Waterbody	Water Quality Classification	Description
N/A	N/A	The City of Goose Creek does not discharge to waters classified as Outstanding Resource (ORW), Trout (TM, TPGT & TPT) or Shellfish Harvesting (SFH).

Table 6c: Discharges to Classified Waters in Hanahan MS4

Waterbody	Water Quality Classification	Description
N/A	N/A	The City of Hanahan does not discharge to waters classified as Outstanding Resource (ORW), Trout (TM, TPGT & TPT) or Shellfish Harvesting (SFH).

3.6 Discharges to Source Water Protection Areas

For discharges to Source Water Protection Areas (SWPA), BMP applications will be conducted through implementation of the six minimum control measures in Section 4.2 for protection necessary to support its uses. The tables below list the details associated with each regulated MS4 area that discharge to a SWPA; please note that the City of Hanahan does not discharge to any SWPA.

Table 7a: Discharges to Source Water Protection Areas in Berkeley County MS4

Waterbody	Buffer	Intake	Facility
Bushy Park Reservoir	200 ft	S10104	Charleston Commissioners of Public Works

Table 7b: Discharges to Source Water Protection Areas in Goose Creek MS4

Waterbody	Buffer	Intake	Facility
Bushy Park Reservoir	200 ft	S10104	Charleston Commissioners of Public Works

4.0 Stormwater Management Plan (SWMP)

4.1 Permit Requirements

4.1.1 Requirements of the NPDES SMS4 General Permit

Berkeley County has implemented this SWMP to reduce the discharge of pollutants from SMS4 areas for the County, City of Goose Creek and City of Hanahan to the maximum extent practicable to protect water quality.

4.1.2 SWMP Development

On behalf of the City of Goose Creek, City of Hanahan and Berkeley County, the County has revised and updated the written SWMP document and will submit the SWMP to SC DHEC Bureau of Water within six months from the effective date of the newly issued permit.

4.1.3 Contents of the SWMP

Berkeley County, City of Goose Creek, and City of Hanahan have met the minimum requirements for a SWMP by including ordinances, or other regulatory mechanisms, and by providing the legal authority necessary to implement and enforce the requirements of the SMS4 general permit. See Appendix D of the SWMP for the Stormwater Management Ordinances for Berkeley County, City of Goose Creek, and City of Hanahan.

4.1.4 Requirement to Develop Adequate Legal Authority

Within one year from the effective date of the permit, the County reviewed and revised the Stormwater Management Ordinance in order to provide adequate legal authority to control pollutant discharges into and from the SMS4, and to meet the requirements of the SMS4 general permit. In November 2014, the Berkeley County Ordinance was amended to establish regulations to develop and enforce a Stormwater Management Program. Additionally, both Goose Creek and Hanahan have established stormwater management ordinances in place since 2014.

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 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).

4.1.5 Enforcement Measures and Tracking

Berkeley County (2014), City of Goose Creek (2015) and City of Hanahan (2014) have developed and implemented an enforcement response plan (ERP) within 12 months from the effective date of this permit. Each 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 continues to track instances of non-compliance either in hard-copy files or electronically for Berkeley County, City of Goose Creek, and City of Hanahan.

4.1.5.3 Recidivism Reduction:

The County summarizes inspection results by consuetudinary violators and include incentives, disincentives, or an increased inspection frequency at the operator's sites for Berkeley County, City of Goose Creek, and City of Hanahan.

4.1.6 Report Requirements

Berkeley County has submitted the following information in the Annual Report for the County, City of Goose Creek, and City of Hanahan (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 Berkeley County SWMP includes the following information for the County, City of Goose Creek and City of Hanahan 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 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 BMPs for each entities 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 has kept the SWMP document up to date during the term of the permit. Where Berkeley County determined that ordinance modifications were needed to address any procedural, protocol, or programmatic change, such changes were made as soon as practicable, but not later than 360 days. The following table describes schedule, frequency and responsible party for SWMP requirements:

Table 8: SWMP Requirements

SWMP REQUIREMENTS			
Develop and Implement SWMP	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>		
	Section: 4.1.2		
Milestone(s)	Schedule	Frequency	Responsible Party
Revise and update written SWMP document to be utilized by Berkeley County, City of Goose Creek and City of Hanahan, and submit the SWMP to SC DHEC Bureau of Water.	July 1, 2014	Once	County Engineer
<p>Update:</p> <ul style="list-style-type: none"> Berkeley County has periodically updated this SWMP (2014, 2016, 2018) to reflect the responsibilities it has undertaken on behalf of the County, Goose Creek and Hanahan. The updated SWMP will be submitted to DHEC by July 1, 2018 along with the Annual Report. 			
Update Stormwater Management Ordinance	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input checked="" 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
<p>Update:</p> <ul style="list-style-type: none"> Berkeley County, Goose Creek and Hanahan have updated their ordinances and copies can be found in Appendix D of the SWMP. 			
Enforcement Response Plan (ERP)	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input checked="" 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
<p>Update:</p> <ul style="list-style-type: none"> Berkeley County, Goose Creek and Hanahan have updated their ERPs and copies can be found in Appendix F of the SWMP. 			

Update Stormwater Management Plan	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input checked="" 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
Update: <ul style="list-style-type: none"> Berkeley County has periodically updated this SWMP (2014, 2016, 2018) to reflect the responsibilities it has undertaken on behalf of the County, Goose Creek and Hanahan. The updated SWMP will be submitted to DHEC by July 1, 2018 along with the Annual Report. 			

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 (both in the County and City of Goose Creek and City of Hanahan) 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 9: Minimum Measure #1 Permit Requirements

4.4.1.1.1	The pollutant(s) of concern (POC) within the watershed areas of Berkeley County, Goose Creek and Hanahan:
	<p>ENTERO and ECOLI – Goose Creek Reservoir, Goose Creek, Wassamassaw Swamp</p> <p>HG – Tail Race Canal, Cooper River at Bushy Park; Durham Creek</p> <p>DO – Foster Creek, Back River Reservoir, Goose Creek, Goose Creek Reservoir, Beresford Creek</p> <p>PH – Goose Creek Reservoir</p> <p>CHLA – Goose Creek Reservoir</p> <p>TP – Goose Creek Reservoir</p>
4.4.1.1.2	Description of the POC(s) listed above:
	<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>
4.4.1.1.3	Programs targeted at high priority community issues with the potential to decrease the POC's effect on water quality:
	On behalf of Goose Creek, Hanahan, and the County MS4 areas, 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.
4.4.1.1.4	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:
	On behalf of Goose Creek, Hanahan, and the County MS4 areas, 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.
4.4.1.1.5	The message(s) directed at the target audience(s) listed above to achieve the program goals and objectives:
	On behalf of Goose Creek, Hanahan, and the County MS4 areas, 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:
	On behalf of Goose Creek, Hanahan, and the County MS4 areas, 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:
	On behalf of Goose Creek, Hanahan, and the County MS4 areas, 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:
	On behalf of Goose Creek, Hanahan, and the County MS4 areas, 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:
	On behalf of Goose Creek, Hanahan, and the County MS4 areas, 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:
	On behalf of Goose Creek, Hanahan, and the County MS4 areas, 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:
	On behalf of Goose Creek, Hanahan, and the County MS4 areas, 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 10 describes the components of Berkeley County's, Goose Creek's, and Hanahan's Public Education and Outreach program:

Table 10: Best Management Practices - Minimum Measure #1

PUBLIC EDUCATION AND OUTREACH BMPS			
Contractual Agreement with Clemson University	Not Started: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	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 the MS4 regulated areas in Berkeley County, Goose Creek, and Hanahan.	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, Goose Creek and Hanahan. 			
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 2016 and 2017. This report is in Appendix E of the 2018 Annual Report. 			
Support Ashley-Cooper Stormwater Education Consortium		Not Started: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>	
		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 2016 and 2017. This report is in Appendix E of the 2018 Annual Report. 			

4.2.2 Public Involvement/Participation (Minimum Measure #2)

4.2.2.1 Minimum Measure #2 Permit Requirements

Berkeley County has collaborated with CUCES's Carolina Clear to efficiently reach as many citizens in the County, Goose Creek, and Hanahan as economically possible through public involvement and participation efforts. CUCES's Carolina Clear provides the citizens of Berkeley County, Goose Creek, and Hanahan opportunities to participate in activities and events relating to water quality preservation and water quality education.

Table 11: Minimum Measure #2 Permit Requirements

4.2.2.1.1	Create opportunities for citizens to participate in the implementation of stormwater controls:
	CUCES's Carolina Clear program provides opportunities for citizen participation in the implementation of stormwater controls in Berkeley County, Goose Creek, and Hanahan.
4.2.2.1.2	Accessing information on this SWMP:
	Berkeley County includes 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 (on behalf of the County, Goose Creek, and Hanahan) 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 12 describes the components of the Public Involvement/Participation program for Berkeley County, Goose Creek, and Hanahan:

Table 12: Best Management Practices – Minimum Measure #2

PUBLIC INVOLVEMENT/PARTICIPATION BMPS			
Opportunities for Citizen Participation			
Not Started: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>			
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, Goose Creek, and Hanahan.	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, Goose Creek, and Hanahan 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 the contract with Carolina Clear, and is involved with the Ashley-Cooper Stormwater Consortium. Through these resources, the County has provided opportunities for citizen participation in the County, Goose Creek, and Hanahan. 			
Provide Access to Information for the SWMP			
Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input checked="" 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: 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 uploaded the SWMP 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 and includes Goose Creek and Hanahan. 			

Written Procedures for Implementing MCM#2	Not Started: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	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/Carolina Clear. 			
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 for the County, Goose Creek, and Hanahan. 			

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 in the County, Goose Creek, and Hanahan by continuing to implement a program in accordance with the SMS4 general permit requirements. The County has developed selection criteria to establish priority areas and identify the priority areas. The basis for selection of each priority area is documented. Outfalls located within the priority areas are visited to check for dry weather flow. Outfalls with dry weather flow are screened to identify potential illicit discharges. Prior to illicit tracking activities, the County has reviewed and updated the existing Standard Operating Procedures for Use in Field Investigation for Illicit Discharges (SOP) document as necessary for illicit tracking procedures.

Table 13: Minimum Measure #3 Permit Requirements

4.2.3.2.1 Development of the storm sewer system map:
Berkeley County has developed a storm sewer system map for the County, Goose Creek, and Hanahan 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 is updated as needed to show new outfalls due to new developments.
4.2.3.2.2 Identification of priority areas:
Berkeley County has developed selection criteria to establish priority areas and identify the priority areas in the County, Goose Creek, and Hanahan. The County documented the basis for its selection of each priority area and created 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 is updated <i>annually</i> to reflect changing priorities and is available for review by the permitting authority.
4.2.3.2.3.a Field screening to detect illicit discharges: Conduct Field Screening

<p>Berkeley County will conduct dry weather field screening and / or analytical monitoring, when necessary, to identify the source of illicit discharges in the County, Goose Creek, and Hanahan. At a minimum, Berkeley County:</p> <ul style="list-style-type: none"> • identifies all field screening points within the priority areas where field screening and potential analytical monitoring will take place. A list of screening points has been developed. The County also conducts field screening and any necessary analytical monitoring outside the priority areas at known non-stormwater discharges. The areas and the schedule for conducting the screening, and field screening points are identified annually. • reviews and updates the SOP document for dry weather screening procedures to include: <ul style="list-style-type: none"> ○ 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. <p>The elimination of all illicit discharges are documented. The SOP document has been reviewed and updated to develop documentation procedures as described in section 4.2.3.2.5/6</p>
<p>4.2.3.2.3.b Field Screening Assessment:</p>
<p>Berkeley County has assessed the effectiveness of the Field Screening component of the IDDE program for the County, Goose Creek, and Hanahan 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.</p>
<p>4.2.3.2.3.c Procedures for notifying another MS4 of an illicit discharge:</p>
<p>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.</p>
<p>4.2.3.2.3.d Addressing a notification of an illicit discharge by another operator:</p>
<p>Berkeley County will follow appropriate procedures when notified of an illicit discharge by another MS4 operator.</p>
<p>4.2.3.2.4/5 Tracing the source of an illicit discharge:</p>
<ul style="list-style-type: none"> ○ Berkeley County has reviewed and updated its IDDE SOP document, applicable in Goose Creek and Hanahan, 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 in the County, Goose Creek, and Hanahan. 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 in the County, Goose Creek or Hanahan 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 has established an illicit reporting hotline for the public and staff to report illicit discharges in the County, Goose Creek, and Hanahan.

The County has established and implemented citizen request response procedures in the illicit tracking procedures document created for section 4.2.3.2.4/5. This includes:

- 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.
- 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.

4.2.3.2.9 Employee training:

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

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 for the County, Goose Creek, and Hanahan. In order to provide a summative document for the various IDDE permit requirements, Berkeley County reviewed and updated the existing IDDE SOP document and IDDE Priority Areas 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 is based on the level of implementation of the BMPs included in this minimum measure. The table describes 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 14 describes the components of Berkeley County's, Goose Creek's, and Hanahan's Illicit Discharge Detection and Elimination (IDDE) program.

Table 14: Best Management Practices – Minimum Measure #3

IDDE BMPs			
Update Storm Sewer Map	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input checked="" 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 for the County, Goose Creek, and Hanahan. This map will be updated as necessary. 			
Identify Priority Areas	Not Started: <input type="checkbox"/> On-going : <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>		
	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 updated the Priority Areas to consolidate Priority Areas for Berkeley County, City of Goose Creek and City of Hanahan. The new list was compiled in an effort to effectively and efficiently assess each MS4's concerns. Priority areas are listed below. <ul style="list-style-type: none"> Priority Area 1: Municipally owned and/or operated facilities with "hot spot" activities, such as vehicle maintenance, storage areas, etc. Priority Area 2: Known areas with repetitive, historical illicit discharges Priority Area 3: Known areas with a history of illegal dumping Priority Area 4: Known areas with older sewer lines, history of sanitary sewer overflows (SSOs), or known cross-connections Priority Area 5: Areas thought to be causative of pollutants of concern (POC) upstream to sensitive waterbodies and/or impaired monitoring stations. 			

Develop Field Screening & Illicit Tracking Procedures	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.3.2.3a/3c/3d/4/5/7/8		
Milestone(s)	Schedule	Frequency	Responsible Party
<p>Develop Illicit section for the ERP.</p> <p>Review and update the SOP document to include:</p> <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 ERPs 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: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	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 are used to identify potential illicit discharges. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> • Berkeley County continues to conduct field screenings for the MS4 areas in the County, City of Goose Creek and City of Hanahan. 			

Field Screening Assessment	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input checked="" 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. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> The County has provided a review of the Field Screening for the County, Goose Creek, and Hanahan in Table 7 of the Second Year Annual Report. 			
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. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> The County continues to track illicit discharges for the County, Goose Creek, and Hanahan. A summary of all illicit discharges has been included in the Second Year Annual Report (25 illicit discharges were identified in the last reporting year). 			
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"> During the current permit cycle (January 2014-June 2018) four (4) illicit discharges have been identified via field screening activities while eighty-seven (87) have been identified via complaint mechanisms. Of the eighty-seven (87), all have been tracked to their source and eliminated. A total of 7 enforcement actions were escalated past written notice. 			

Develop a Written Spill/Dumping Response Procedure	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> 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 for the County, Goose Creek, and Hanahan 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: <input type="checkbox"/> In Progress : <input type="checkbox"/> 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 and Stormwater Facebook page. Additionally, the webpage contains an electronic fillable complaint form for public input. These options allow the public and staff to report potential illicit discharges in the County, Goose Creek, and Hanahan. 			
Employee Training	Not Started: <input type="checkbox"/> On-going : <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	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"> Two IDDE and Good Housekeeping trainings were conducted in 2017 with training scheduled to be conducted in 2018: <ul style="list-style-type: none"> 100 employees (83 from Berkeley County, 5 from Hanahan, and 12 from Goose Creek) attended on May 30 10 employees attended on July 20, 2017 			

4.2.4 Construction 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 15: 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</p> <ul style="list-style-type: none"> • Berkeley County Stormwater Management Ordinance Section 3.2 Design and Engineering Standards • City of Goose Creek Stormwater Management Ordinance Section 50.052 Design and Engineering Standards • City of Hanahan Stormwater Management Ordinance Section 3.3 Design/Engineering Standards <p>Ordinance section for sanctions to ensure compliance can be found in</p> <ul style="list-style-type: none"> • Berkeley County Stormwater Management Ordinance Section 6.1 Enforcement • City of Goose Creek Stormwater Management Ordinance Section 50.105 Enforcement • City of Hanahan Stormwater Management Ordinance Section 7.1 Enforcement <p>A copy of the Ordinances for Berkeley County, City of Goose Creek, and City of Hanahan 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 the County, City of Goose Creek and City of Hanahan for construction site operators to implement appropriate BMP such as,</p> <ol 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> <ol 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:
 - 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 County, Goose Creek, and Hanahan SMS4 for review and approval.

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 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 for the County, Goose Creek and Hanahan. 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 the County, City of Goose Creek, and City of Hanahan in accordance with the frequency listed in the SMS4 General Permit.
- c. Berkeley County will adequately inspect all phases of construction for the County, Goose Creek, and Hanahan. 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 for the County, Goose Creek, and Hanahan. 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, Goose Creek's, and Hanahan'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):
<p>Berkeley County, City of Goose Creek, and City of Hanahan will develop Enforcement Response Plans (ERPs). The ERP will contain descriptions of how each MS4 will use specific type of responses to address various types of violations. The ERP will include, but is not limited to:</p> <ul style="list-style-type: none"> a. Types of response; <ul style="list-style-type: none"> i. Verbal warnings, ii. Written notices, and iii. Escalated enforcement measures such as citations, fines, stop work orders, etc. b. Specific strategies for escalating enforcement response, where necessary, to address persistent, repeat or escalating violations. c. Ensure ERPs are reasonably effective in reducing pollutant discharges to the MEP and to protect water quality.
4.2.4.8 MS4 staff training:
<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, are trained to conduct these activities for the County, Goose Creek, and Hanahan.</p>
4.2.4.9 Construction site operator and public involvement:
4.2.4.9.a Construction operator education:
<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 for the County, Goose Creek, and Hanahan.</p>
4.2.4.9.b Public involvement:
<p>Berkeley County will implement procedures for receipt and consideration of information submitted by the public for the County, Goose Creek, and Hanahan. 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 16 describes the components of the Berkeley County’s, Goose Creek’s, and Hanahan’s construction site stormwater runoff control program:

Table 16: Best Management Practices - Minimum Measure #4

CONSTRUCTION SITE STORMWATER RUNOFF CONTROL BMPs			
Erosion Prevention and Sediment Control (EPSC) Requirements	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> 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 Goose Creek’s, and Hanahan’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: <input type="checkbox"/> In Progress: <input checked="" type="checkbox"/> Completed: <input 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 18.	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 Goose Creek's, and Hanahan's Stormwater Design Standards Manual is in the process of being updated. Pollution Prevention requirements are currently located in Section 2.2.2.1.3.w-z. 			
Update Plan Review Procedures	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.4.5		
Milestone(s)	Schedule	Frequency	Responsible Party
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. 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.	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 Goose Creek's, and Hanahan'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: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.4.6(a)		
Milestone(s)	Schedule	Frequency	Responsible Party
Maintain an inventory of all active construction projects to include information for: <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 for Berkeley County Goose Creek, and Hanahan in a database. 			
Update Site Inspection Procedures	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> 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 Goose Creek's, and Hanahan'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: <input type="checkbox"/> In Progress : <input type="checkbox"/> 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, Goose Creek and Hanahan developed separate Enforcement Response Plans which include a section on construction/permitting violations. The ERPs can be found in Appendix F. 			
Update Stormwater Management Ordinance		Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>	
		Section: 4.2.4.7	
Milestone(s)	Schedule	Frequency	Responsible Party
Berkeley County, Goose Creek and Hanahan 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"> The Stormwater Management Ordinances for Berkeley County, Goose Creek and Hanahan provide the appropriate authority to meet and enforce the criteria of this MCM, and are included in Appendix D of this SWMP. 			
Train MS4 Staff		Not Started: <input type="checkbox"/> On-going : <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>	
		Section: 4.2.4.8	
Milestone(s)	Schedule	Frequency	Responsible Party
Berkeley County, Goose Creek, and Hanahan 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 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: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.4.9.a		
Milestone(s)	Schedule	Frequency	Responsible Party
Berkeley County, Goose Creek, and Hanahan 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 inspectors and engineers hold 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: <input type="checkbox"/> In Progress: <input type="checkbox"/> 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. Additionally, forwarding information to Berkeley County's contact information is made available on Goose Creek's and Hanahan's websites and provided by municipal staff. 			

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 in the MS4 areas in the County, City of Goose Creek, and City of Hanahan. 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 17: Minimum Measure #5 Permit Requirements

<p>4.2.5.1 Post-construction stormwater management program:</p>
<p>Berkeley County will provide water quality design requirements for the MS4 areas in the County, Goose Creek, and Hanahan 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.</p>
<p>4.2.5.2 Site performance standards:</p>
<p>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 the SMS4 areas in the County, Goose Creek, and Hanahan, 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.</p>
<p>4.2.5.3 Site plan review:</p>
<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 Berkeley County, Goose Creek, and Hanahan MS4s (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>
<p>4.2.5.4 Long-term maintenance of post-construction stormwater control measures:</p>
<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 in the County, Goose Creek, and Hanahan.</p> <p>Berkeley County will require that property owners or operators of any new development or redeveloped site in the MS4 areas in the County, Goose Creek, and Hanahan 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 areas for the County, Goose Creek, and Hanahan. 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, for the County, Goose Creek, and Hanahan, covered under the performance standards listed in the Stormwater Design Standards Manual, at least one time during the permit term.</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, for the County, Goose Creek, and Hanahan, 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 for the MS4 areas in the County, City of Goose Creek and City of Hanahan 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 18 describes the components of Berkeley County's, Goose Creek's, and Hanahan's Post-Construction stormwater management plan:

Table 18: Best Management Practices – Minimum Measure #5

POST-CONSTRUCTION STORMWATER MANAGEMENT BMPs			
Develop Water Quality Design Requirements	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> 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 type="checkbox"/> In Progress : <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	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 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County's Stormwater Design Standards Manual is in the process of final updates being adopted during the summer of 2018. These updates include performance and design standards for Post Construction BMPs. 			
Revise Plan Review Checklist for Post Construction SWP3 Submittal Requirements	Not Started: <input type="checkbox"/> In Progress : <input checked="" 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. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County's Stormwater Design Standards Manual is in the process of final updates being adopted during the summer of 2018. These updates include performance and design standards for Post Construction BMPs. 			

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 permitted post-construction BMPs constructed since January 1, 2014 in the County, Goose Creek and Hanahan. This is stored in the County's project management system, EnerGov and is updated as needed. 			
Post-Construction BMP Inspections Program	Not Started: <input type="checkbox"/> On-going : <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	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
<u>Measurable Goal:</u>			
<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. 			
<u>Measurable Goal Update:</u>			
<ul style="list-style-type: none"> • In the last reporting year, the County has conducted 77 post-construction BMP inspections (57 in the County, 16 in Goose Creek, and 4 in Hanahan). 			

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 and City-Owned facilities and storm sewer systems. A County, Goose Creek, and Hanahan inventory of municipal facilities was developed, and each facility was assessed for the potential pollutant discharges. Based on the assessment, a list of high priority facilities has been developed, and annual inspections will be conducted at the high priority facilities. Berkeley County prioritized the County, Goose Creek, and Hanahan owned and /or operated stormwater management systems and implemented a maintenance schedule. All County and City-Owned structural controls (stormwater BMPS) will continue to be inspected and maintained. In addition, the County reviewed and updated a set of pollution prevention measures for operation and maintenance activities. Berkeley County will continue to provide training to County, Goose Creek, and Hanahan appropriate employees to ensure pollution prevention and good housekeeping activities are practiced throughout the County's, Goose Creek's, and Hanahan's separate departments and that are consistent with the current Good Housekeeping Manual.

Table 19: 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.) for the County, City of Goose Creek, and City of Hanahan. 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, City of Goose Creek or City of Hanahan 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 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 municipally-owned or operated facilities for the County, City of Goose Creek, and City of Hanahan 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 for the County, City of Goose Creek, and City of Hanahan 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 for the County, City of Goose Creek and City of Hanahan. The documentation will include the results of Berkeley County’s initial assessment, any identified deficiencies and corrective actions taken.</p>	

4.2.6.3 Annual comprehensive inspections of high priority facilities:
<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 on County, City of Goose Creek, and City of Hanahan facilities. 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>
4.2.6.4 Storm sewer system maintenance activities – MS4 maintenance:
4.2.6.4.1 Assessment/prioritization of stormwater management systems/structures:
<p>Berkeley County will prioritize municipally owned and /or operated storm water management systems / structures for the County, City of Goose Creek and City of Hanahan, and implement a maintenance schedule.</p>
4.2.6.4.2 Municipal activities and operation:
<p>Berkeley County will review and update a set of pollution prevention measures for the County, City of Goose Creek and City of Hanahan 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>
4.2.6.4.3 Maintenance of municipally-owned and/or maintained structural stormwater controls:
<p>Berkeley County will inspect, and maintain, wherever and whenever necessary, all County and municipally owned or maintained structural stormwater controls. Berkeley County will also maintain all County and municipally owned green infrastructure practices through regularly scheduled maintenance activities.</p>

4.2.6.5	Employee training and education requirements:
<p>Berkeley County will develop an annual employee training program for appropriate employees in the County, City of Goose Creek and City of Hanahan involved in implementing pollution prevention and good housekeeping practices.</p> <p>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.</p> <p>A description of the program will be maintained for review by the permitting authority.</p> <p>Berkeley County will also identify and track all personnel requiring training and records must be maintained.</p> <p>Training will begin within the first year from the effective date of permit authorization.</p>	
4.2.6.6	Requirements for contractor oversight:
<p>Contractors hired by Berkeley County, Goose Creek or Hanahan 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.</p> <p>Berkeley County will provide oversight of contractor activities to ensure that contractors are using appropriate control measures and procedures.</p>	

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 20 describes the components of Berkeley County's, Goose Creek's, and Hanahan's pollution prevention/good housekeeping for municipal operations program:

Table 20: 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		
Milestone(s)	Schedule	Frequency	Responsible Party
Develop an inventory of all County & City-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 in the County, Goose Creek and Hanahan is stored in an Excel spreadsheet. 			
Assessment of Non-Permitted Municipal Facilities	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> 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 & City owned BMPs to rank County & City 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. 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 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: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>	
		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 for the County, Goose Creek, and Hanahan were conducted in June of 2015, September of 2016 and November of 2017. Additional inspections are scheduled to occur in 2018. 			
<ul style="list-style-type: none"> The high priority inspections completed in 2015 2016 and 2017 for the County, Goose Creek, and Hanahan were documented and are included in the Berkeley County Facility Inspection reports. 			
Prioritization of Stormwater Management Systems/Structures		Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>	
		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 			
Measurable Goal Update:			
<ul style="list-style-type: none"> A maintenance schedule was created and is updated as necessary, by staff conducting the maintenance. 			

Review and Update Pollution Prevention Measures for Operation and Maintenance Activities	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>		
	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. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Pollution prevention measures for municipal operation and maintenance activities are described in the Good Housekeeping Manual (revised April 2018). 			
Inspect and Maintain County Owned Structural Controls	Not Started: <input type="checkbox"/> On-going : <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	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 and municipality-owned structural controls are inspected and maintained as necessary. 			
Pollution Prevention and Good House Keeping Employee Training	Not Started: <input type="checkbox"/> On-going : <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	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. Two IDDE and Good Housekeeping trainings were conducted in 2017. 			

4.4 Sharing Responsibility

In October 2015, intergovernmental agreements between Berkeley County, the City of Hanahan, and the City of Goose Creek were signed. Berkeley County is responsible for the items stated in the agreements (located in Appendix H) and will continue to provide the services stated in those agreements. In the second reporting period (2016-2017), Berkeley County updated this SWMP to address these additional municipalities.

4.5 Reviewing and Updating Storm Water Management Plans

Table 21: Reviewing and Updating SWMP

SWMP REQUIREMENTS			
Update Storm Water Management Plan	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> 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: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	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, Goose Creek, or 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 Berkeley County, Goose Creek, or 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 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.

5.0 Monitoring, Record Keeping, and Reporting

5.3 Reporting

Table 22: Reporting

REPORTING			
1st Report	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> 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 type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>		
	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):

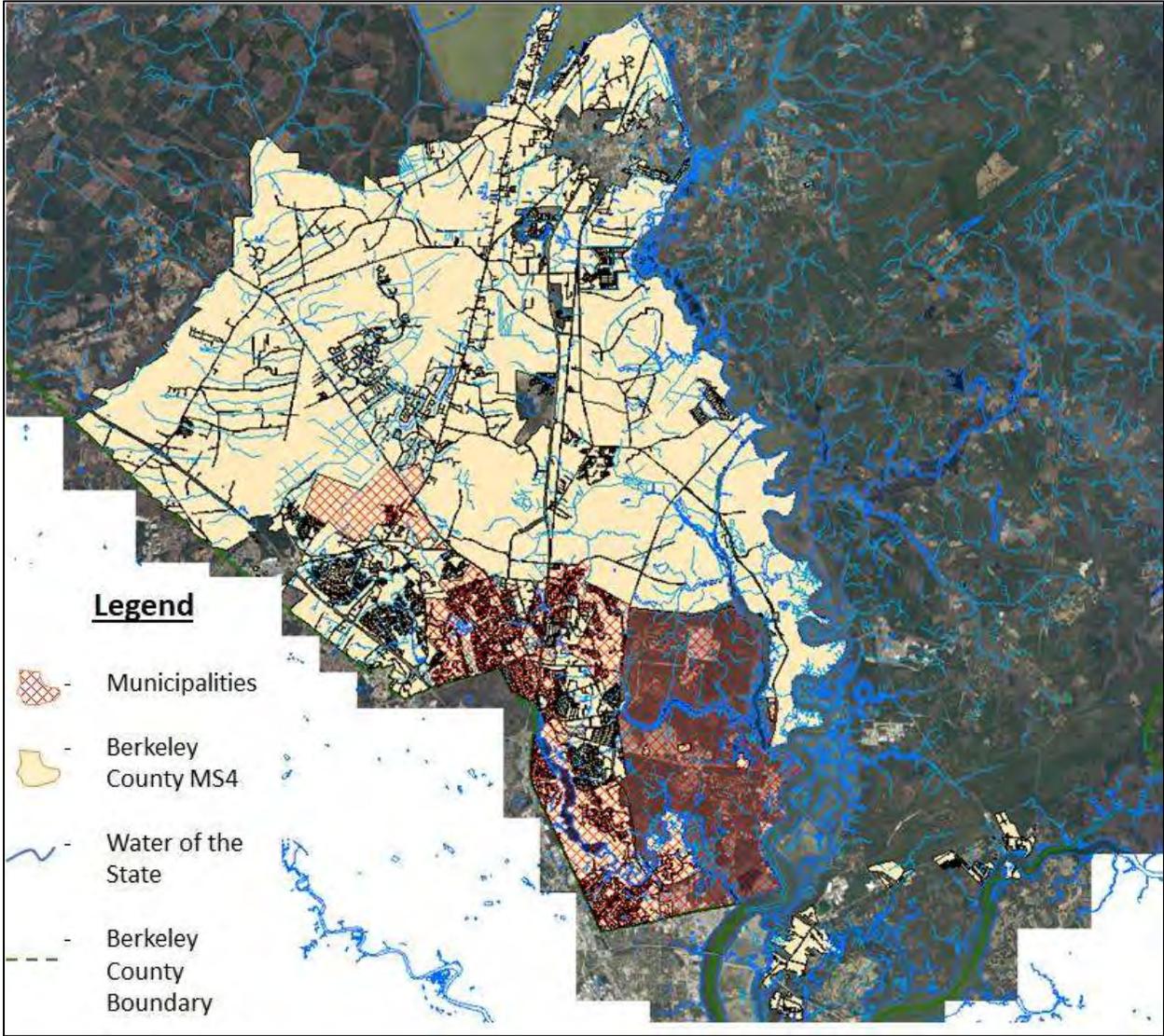
SCDHEC Bureau of Water
Water Pollution Compliance & Enforcement
2600 Bull Street
Columbia, SC 29201-1708

All reports will include:

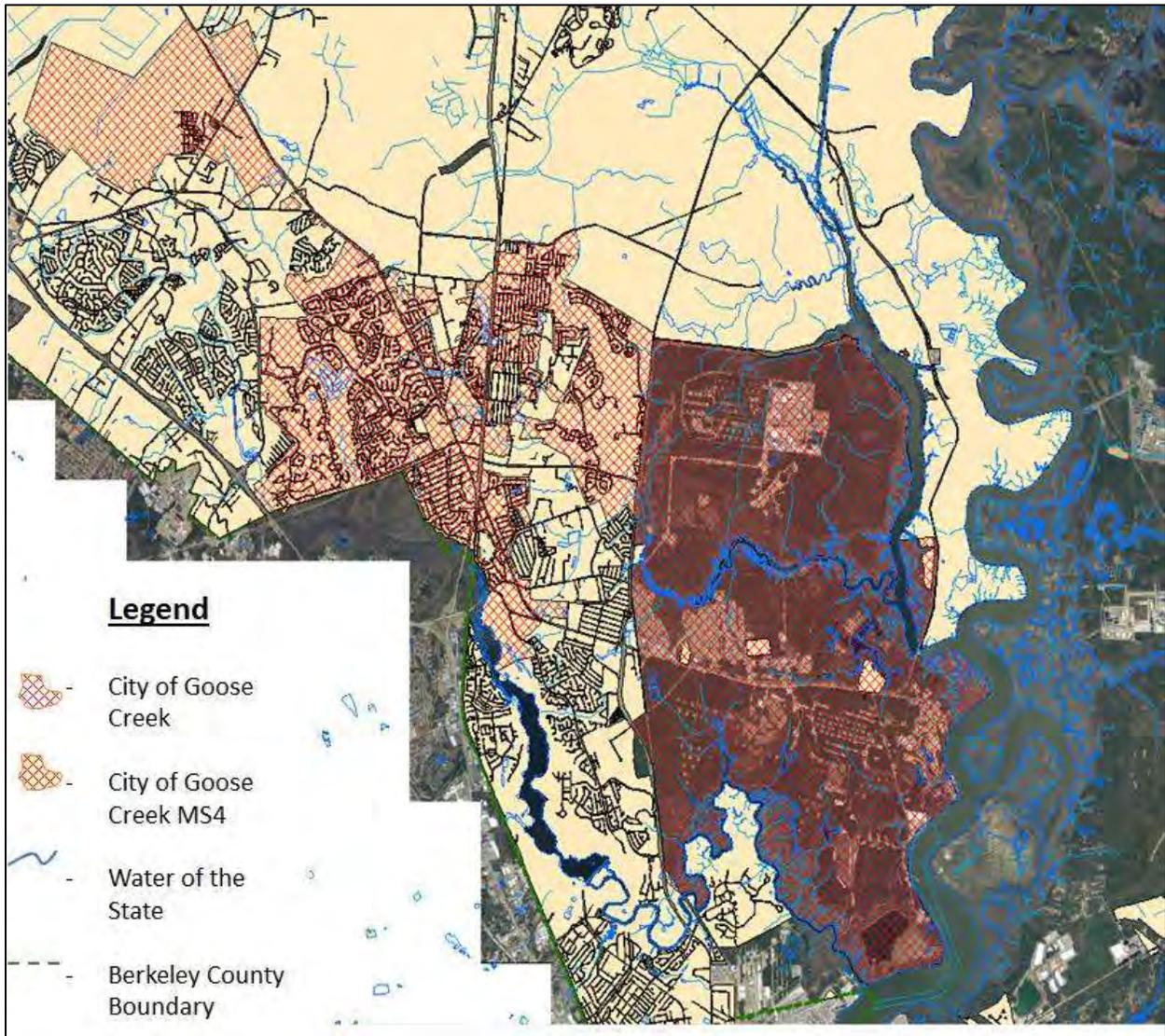
- The status of the County's, Goose Creek's, and Hanahan's compliance with permit conditions, an assessment of the appropriateness of the identified BMP under Part 4, progress towards achieving the statutory goal of reducing the discharge of pollutants to the MEP, and the measurable goals for each of 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, Goose Creek, and Hanahan plans to undertake during the next reporting cycle (including an implementation schedule);
- Proposed changes to the County's, Goose Creek's, and Hanahan's SWMP, including changes to any BMP or any identified measurable goals that apply to the plan elements; and
- Notice that the County, Goose Creek, and Hanahan are relying on another entity to satisfy some of the 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: MS4 Regulated Areas

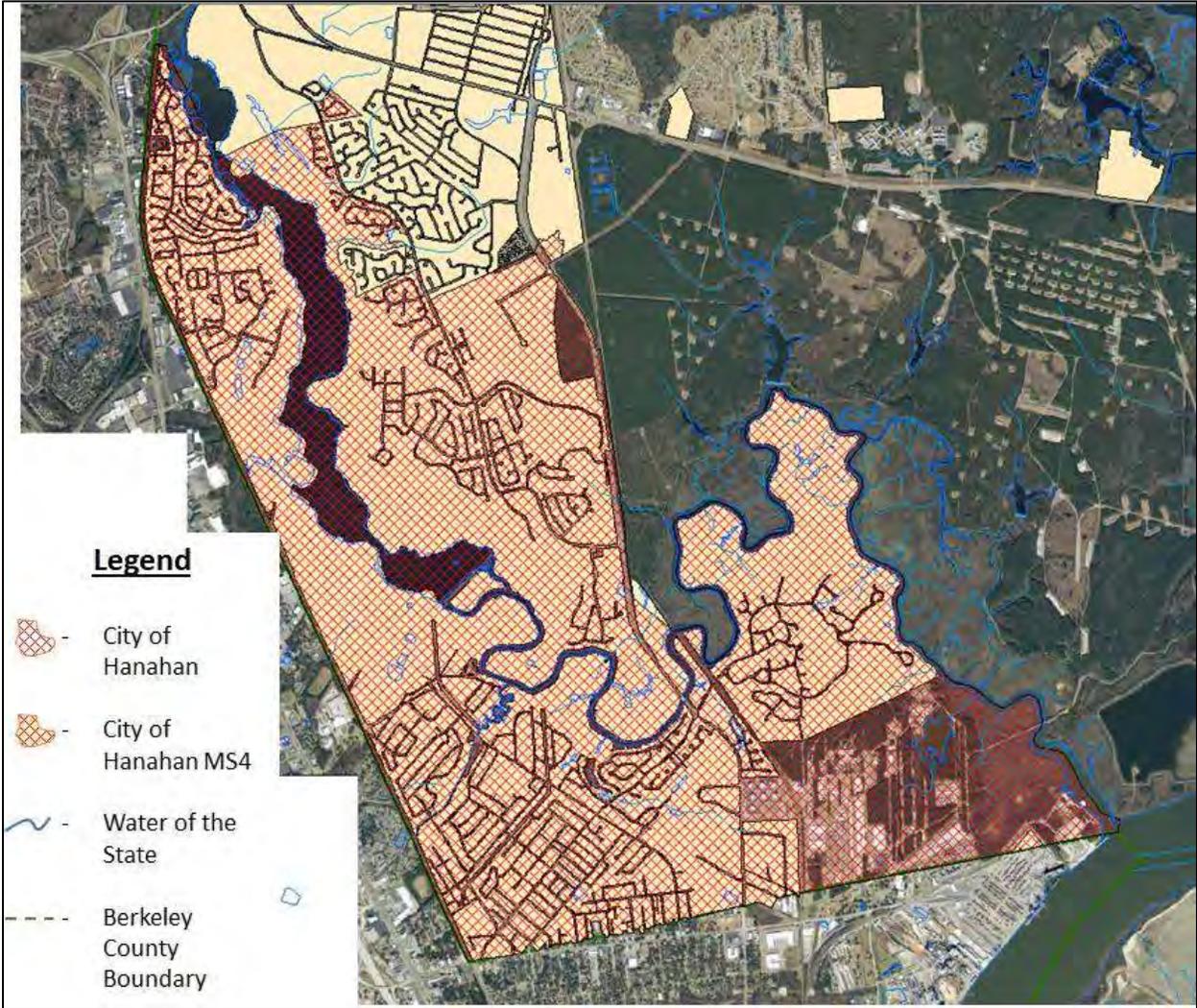
Berkeley County



City of Goose Creek



City of Hanahan



Appendix B: Berkeley County SWMP Updates

Date	Description of Update or Revision
June 2018	Updating language throughout document and appendices to synthesize and consolidate information for Berkeley County, City of Goose Creek and City of Hanahan.
	Updates to the Minimum Measures Tables to reflect current status of each milestone.
	Amending Measureable Goal Updates to 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.
	Appendices were updated to reflect revised/updated documentation.
	The impaired stations list was updated from the 2014 303(d) list to the 2016 303(d) list. The changes that were made are listed in the 2018 Annual Report and are reflected in the current SWMP.
	BMPs were adjusted to provide an accurate description of what has been completed to date.

Appendix C: 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.

The City of Hanahan and City of Goose Creek have their own TMDL Monitoring and Assessment Plan.

City of Goose Creek 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 Goose Creek 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 Goose Creek 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
 - (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.

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

-
- (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 D: Stormwater Management Ordinances



BERKELEY COUNTY COUNCIL

Daniel W. Davis - Supervisor & Chairman
Dennis L. Fish - Vice Chairman (District No. 5)

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DEC - 3 2014

BERKELEY COUNTY
ENGINEERING DEPARTMENT

COMMITTEE CHAIRMEN

District 1
Phillip Farley
Committee on
Land Use &
Development

District 2
Timothy J. Callanan
Committee on
Finance

District 3
Kenneth E. Gunn, Jr.
Committee on
Justice &
Public Safety

District 4
Cathy S. Davis
Committee on
Water & Sanitation

District 5
Dennis L. Fish
Committee on
Human Resources &
Purchasing

District 6
Jack H. Schurlknight
Committee on
Human Services

District 7
Caldwell Pinckney, Jr.
Committee on
Community Services

District 8
Steve C. Davis
Committee on
Facilities & Code
Enforcement

December 2, 2014

Ms. Kace Smith
Berkeley County Deputy Supervisor/Finance
P.O. Box 6122
Moncks Corner, SC 29461

Re: Ordinance No. 14-11-36, to amend Ordinance No. 07-07-44, an ordinance establishing regulations to develop and enforce a Stormwater Management Program to reduce the discharge of pollutants associated with stormwater runoff and Berkeley County's Storm Sewer System.

Dear Ms. Smith:

You will find enclosed a certified copy of the above referenced ordinance adopted by Berkeley County Council at a Regular Meeting of Council on November 24, 2014.

If any additional information is required, please do not hesitate to give our office a call.

With kind regards,

Catherine R. Windham
Clerk to Council

Enclosure: as stated

Copy w/enclosure to:

✓ Mr. Frank Carson, County Engineer
Mary P. Brown - For Filing



Berkeley County

Stormwater Management Ordinance

Certified True and Correct Copy of Original Record

Catherine K. Linnetham

Clerk to Council
County Council Berkeley County SC

STORMWATER MANAGEMENT ORDINANCE

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ORDINANCE NO. 14-11-36

AN ORDINANCE TO AMEND ORDINANCE NO. 07-07-44, AN ORDINANCE ESTABLISHING REGULATIONS TO DEVELOP AND ENFORCE A STORMWATER MANAGEMENT PROGRAM TO REDUCE THE DISCHARGE OF POLLUTANTS ASSOCIATED WITH STORMWATER RUNOFF AND BERKELEY COUNTY'S STORM SEWER SYSTEM.

WHEREAS, Berkeley County Council adopted a Stormwater Management Ordinance for Berkeley County, on July 24, 2007;

WHEREAS, 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; and

WHEREAS, Berkeley County is required by federal and State law to obtain a National Pollutant Discharge Elimination System (NPDES) permit from the South Carolina Department of Health and Environmental Control for stormwater discharges from Berkeley County's stormwater systems; and

WHEREAS, the NPDES permit requires that Berkeley County develop, implement, and enforce a stormwater management program in its regulated area designed to reduce the discharge of pollutants from its small municipal separate storm sewer systems to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act.

NOW, THEREFORE BE IT ENACTED by Berkeley County Council, in a meeting duly assembled, that Ordinance No. 07-07-44, is amended and revised as follows:

**DIVISION 1
GENERAL PROVISIONS**

Section 1.1 Title

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

Section 1.2 Authority

This ordinance 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 1976 South Carolina Code of Laws Sections 4-9-30, 4-9-40, 5-7-30, and 5-7-60.

Section 1.3 Jurisdiction

The boundaries and jurisdiction of this Ordinance 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.

Section 1.4 Findings

Berkeley County Council makes the following findings:

- (a) 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.
- (b) 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.

Section 1.5 Purpose

- (a) It is the purpose of this ordinance 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 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 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 ordinance 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 non-stormwater discharges and similar other incidental non-stormwater 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 non-traditional 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 ordinance to establish authority for the County Engineer for determining consistency of construction projects with the Berkeley County SWMP.

Section 1.6 Construction and Scope

- (a) The provisions of this Ordinance 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 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 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.

Section 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.

Section 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 Berkeley County, unless otherwise indicated.

Section 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. 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.

Section 1.10 Amendments

Berkeley County 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 Berkeley County stormwater management systems and facilities outfall.

Section 1.11 Conflicting Ordinances Repealed

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 publications pertaining to stormwater management.

Section 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 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 Ordinance 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).

“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” 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.

“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 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 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 “Re-Development” 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 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 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 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. 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 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 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.

Section 1.13 Reserved

**DIVISION 2
ORGANIZATION AND ADMINISTRATION**

Section 2.1 Berkeley County Stormwater Management Program (SWMP)

The SWMP being developed by Berkeley County to implement the purposes of this Ordinance 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 Ordinance. 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 Ordinance.

Section 2.2 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.

Section 2.3 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 Ordinance. 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 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 County Engineer or his designee will be permitted to enter without delay for the purposes of performing such responsibilities identified in (a).

Section 2.4 Reserved

**DIVISION 3
STORMWATER QUANTITY AND QUALITY MANAGEMENT REQUIREMENTS**

Section 3.1 Regulations

- (a) The County Engineer 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

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 Ordinance.
- (2) To deny a connection to a Berkeley County stormwater management system or facility, if State requirements and this Ordinance are not met.
- (3) To enact and amend the Berkeley County Stormwater Design 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 Ordinance.

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 (1) 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 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.
- (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 Ordinance, 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 Ordinance, 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 Ordinance.

- (12) To require encroachment permits as necessary.

Section 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 allow 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 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 Ordinance 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 Ordinance.

- (a) 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.
- (b) 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.
- (c) Linear utility installation activities that are covered under their own DHEC approved utility general permit requiring associated assurance of proper stormwater management.
- (d) Activities undertaken by persons who are otherwise regulated by the provisions of Chapter 20 Title 48, the South Carolina Mining Act.
- (e) Discharges of dredged or fill material into waters of the United States which are regulated under section 404 of the Clean Water Act (CWA).

Section 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 County Engineer 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 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.

Section 3.4 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 Ordinance, the SWMP, and other State and Federal regulations.

Section 3.5 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:

- (a) Required application and approval procedures for all applicable construction activities;
- (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 Berkeley County and the public health, safety, and general welfare of the citizens of Berkeley County.
- (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 Design Manual shall be updated periodically to reflect the advances in technology and experience gathered with time.

Section 3.6 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, non-exclusive, 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 Ordinance.
- (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;

Section 3.7 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.

- (a) 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.
- (b) 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.
- (c) 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.
- (d) 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.

- (e) 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.
- (f) The construction project completion and closeout process must be completed 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 Berkeley County road inventory or designation of road owner and associated stormwater management system.
 - (3) Release of any bond held by Berkeley County.
 - (4) 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.

Section 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 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.

Section 3.9 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 (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 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 (5) years. Failure to provide notification of a release as provided above is a violation of this ordinance.

Section 3.10 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.

Section 3.11 Reserved

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

Section 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 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 ordinance 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 non-stormwater discharges.

Section 4.2 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.

Section 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, 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.

Section 4.4 Reserved

DIVISION 5 MONITORING AND INSPECTIONS

Section 5.1 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.

Section 5.2 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 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 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 ordinance.

Section 5.3 Reserved

DIVISION 6 ENFORCEMENT, PENALTIES, AND ABATEMENT

Section 6.1 Enforcement

- (a) The County Engineer or his designee may initiate an enforcement action when violations of this Ordinance 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 non-compliance with water quality standards or this Ordinance.
- (b) The County Engineer or his designee shall direct conformity to approvals and this Ordinance 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 non-compliance with this Ordinance.
- (e) Nothing contained in this Ordinance 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 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) This Ordinance 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 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.

Section 6.2 Fines

Any person violating any provision of this ordinance shall be subject to a fine of not more than one thousand dollars (\$1,000) 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.

Section 6.3 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 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.

Section 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 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.

Section 6.5 Corrective Action

In the event a violation of this Ordinance 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.

Section 6.6 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 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 fees, bonds, and penalties prior to the lifting of the stop work order.

Section 6.7 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:

- (a) Violations of the conditions in any approved plans or applications required by the Design Manual;
- (b) Construction is not in accordance with the approved plans;
- (c) Non-compliance with correction notice(s) or stop work order(s);
- (d) The existence of an immediate danger to a downstream area (in the judgment of the County Engineer or his designee);
- (e) Other violations of this Ordinance.

Section 6.8 Reserved

DIVISION 7 VARIANCES

Section 7.1 Variance Criteria

The County Engineer 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 County, 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 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.

Section 7.2 Reserved

DIVISION 8 APPEALS

Section 8.1 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 fifteen (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 forty-five (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 (10) 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 sixty (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.

Section 8.2 Reserved

DIVISION 9 CHARGES AND FEES

Section 9.1 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.

Section 9.2 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.

Section 9.3 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.

Section 9.4 Connection to Conveyances

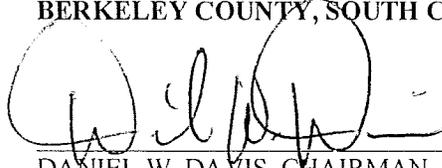
The County shall have the right to establish a schedule of appropriate fees for any person or property owner establishing a new discharge to Berkeley County stormwater management systems or facilities. Application fees shall be established on the basis of facility classes relating to the quantity and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

Section 9.5 Reserved

THE WITHIN ORDINANCE SHALL BECOME EFFECTIVE IMMEDIATELY UPON ITS ADOPTION BY BERKELEY COUNTY COUNCIL.

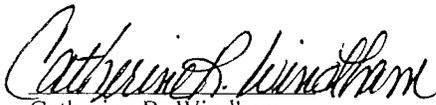
ADOPTED this 24th day of November 2014.

BERKELEY COUNTY, SOUTH CAROLINA



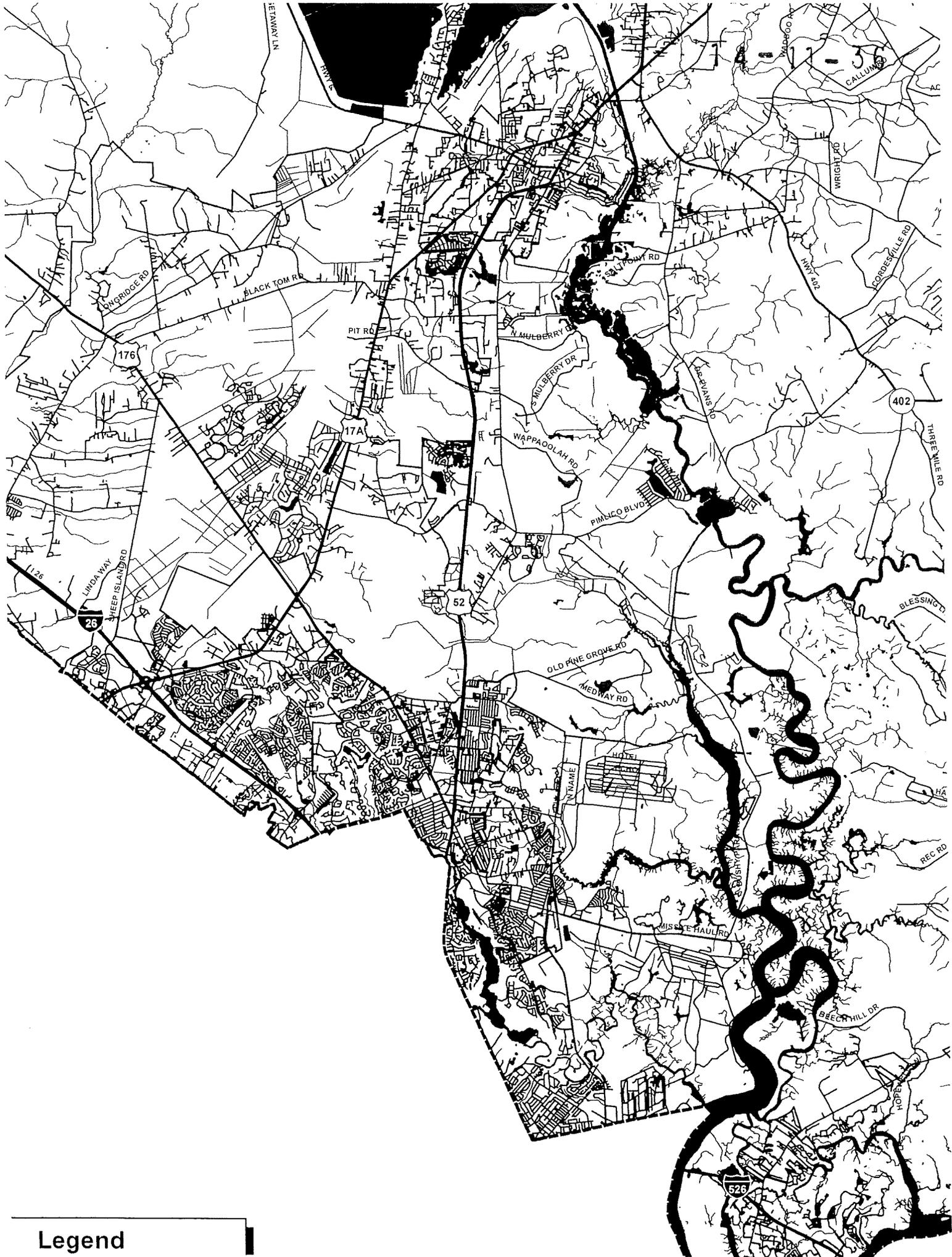
DANIEL W. DAVIS, CHAIRMAN
Berkeley County Council

Attest:



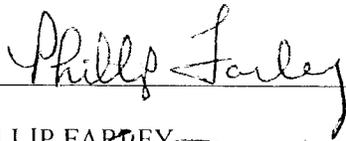
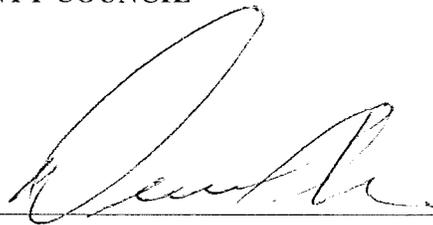
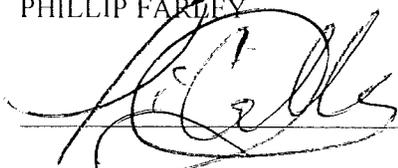
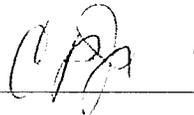
Catherine R. Windham
Clerk of County Council

First Reading:	September 22, 2014
Second Reading:	October 27, 2014
Public Hearing:	November 24, 2014
Third Reading:	November 24, 2014



Legend

MEMBERS OF COUNTY COUNCIL

			
PHILLIP FARLEY	Voting <u>YES</u>	DENNIS L. FISH	Voting <u>YES</u>
			
TIMOTHY J. CALLANAN	Voting <u>YES</u>	JACK H. SCHURLKNIGHT	Voting <u>YES</u>
			
KENNETH E. GUNN, JR.	Voting <u>YES</u>	CALDWELL PINCKNEY, JR.	Voting <u>YES</u>
			
CATHY S. DAVIS	Voting _____	STEVE C. DAVIS	Voting <u>YES</u>

CHAPTER 50: STORMWATER MANAGEMENT

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- [50.003](#) Jurisdiction
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GENERAL PROVISIONS

§ 50.001 TITLE.

This chapter shall be known as the “Stormwater Management Ordinance of the City of Goose Creek, South Carolina”.

(Ord. 07-017, passed 11-13-2007)

§ 50.002 AUTHORITY.

This chapter is adopted pursuant to the authority conferred upon the City of Goose Creek 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. Code §§ 4-9-30, 4-9-40, 5-7-30 and 5-7-60.

(Ord. 07-017, passed 11-13-2007)

§ 50.003 JURISDICTION.

The boundaries and jurisdiction of this chapter shall encompass those portions of the incorporated City of Goose Creek, as they may exist from time to time.

(Ord. 07-017, passed 11-13-2007)

§ 50.004 FINDINGS.

The Goose Creek City Council makes the following findings:

(A) Uncontrolled stormwater runoff may have a significant, adverse impact on the health, safety and general welfare of the City of Goose Creek 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 Goose Creek is required by federal law (33 U.S.C § 1342(p) and 40 C.F.R. 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 Goose Creek Stormwater System. The NPDES permit requires the City of Goose Creek to impose controls to reduce the discharge of pollutants in stormwater to the maximum extent practicable (MEP) using management practices, control techniques and system, design and engineering methods and other provisions which are determined to be appropriate for the control of the pollutants.

(C) Additionally, certain facilities that discharge stormwater associated with an industrial activity, including construction activities, are required by the South Carolina Code of Regulations 61-9-122 to obtain NPDES permits for construction activities.

(Ord. 07-017, passed 11-13-2007)

§ 50.005 PURPOSE.

(A) It is the purpose of this chapter to protect, maintain and enhance water quality and the environment of the City of Goose Creek and the short-term and long-term public health, safety and general welfare of the citizens of the City of Goose Creek. This chapter 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 chapter 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 chapter to direct the development and implementation of a Stormwater Management Program (SWMP) and to establish legal authority which authorizes or enables the City of Goose Creek at a minimum to:

(1) Comply with state and federal requirements related to stormwater management developed pursuant to the Clean Water Act, being 33 U.S.C. §§ 1251 *et seq.*;

(2) Prohibit illicit discharges to the City of Goose Creek stormwater management systems and facilities and receiving waters;

(3) Control to the maximum extent practical, the discharge to the City of Goose Creek 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 the City of Goose Creek;

(8) Control the discharge from the City of Goose Creek stormwater management systems and facilities and receiving waters 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 Goose Creek;

(10) Provide for adequate long-term operation and maintenance of Best Management Practices (BMPs);

(11) Prior to any review of construction activities within the City of Goose Creek, require a letter from the office of the Department of Health and Environmental Control's (DHEC) Office of Ocean and Coastal Resource Management that states the proposed project is consistent with the Coastal Zone Management Plan;

(12) Carry out inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions, including the prohibition on illicit discharges to the City of Goose Creek storm sewer system and receiving waters;

(13) Encourage the use of non-traditional strategies 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. The 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 water bodies and to work towards compliance with total maximum daily loads (TMDLs) established by EPA or SCDHEC and to work towards meeting water quality standards; and

(16) Enable enforcement of all authorizations.

(C) It is still further the purpose of this chapter to establish review authority for the City of Goose Creek Department of Public Works for establishing consistency of construction projects with

the City of Goose Creek SWMP.
(Ord. 07-017, passed 11-13-2007)

§ 50.006 CONSTRUCTION AND SCOPE.

(A) The provisions of this chapter shall apply throughout the incorporated areas of the City of Goose Creek.

(B) The Director of Public Works, or his or her designee, shall be primarily responsible for the coordination and enforcement of the provisions of this chapter and the SWMP.

(C) The application of this chapter 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 Goose Creek, or powers granted the City of Goose Creek by the State of South Carolina statutes, including, without limitation, the power to require additional or more stringent stormwater management requirements. In additional protections, if site characteristics on new development, redevelopment and existing developments 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.
(Ord. 07-017, passed 11-13-2007)

§ 50.007 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 Goose Creek, unless otherwise indicated.
(Ord. 07-017, passed 11-13-2007)

§ 50.008 RELATIONSHIP WITH OTHER LAWS, REGULATIONS AND ORDINANCES.

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

(Ord. 07-017, passed 11-13-2007)

§ 50.009 AMENDMENTS.

The Goose Creek City Council, may, in its discretion and following procedures specified by state law, amend or change this chapter or adopt additional regulations or resolutions to implement this chapter, implement the SWMP or to otherwise further the goal of protecting the quality of the waters into which the City of Goose Creek storm sewer system outfalls.

(Ord. 07-017, passed 11-13-2007)

§ 50.010 CONFLICTING ORDINANCES REPEALED.

All ordinances or parts of ordinances in conflict with the provisions of this chapter are hereby repealed. This chapter shall prevail in any and all conflicts with guidelines, manuals or other publications.

(Ord. 07-017, passed 11-13-2007)

§ 50.011 DEFINITIONS.

For the purpose of this chapter, the following definitions shall apply unless the context indicates or requires a different meaning.

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

AS-BUILT DRAWINGS. 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). 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 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.** Activity involving clearing, grading, transporting, filling or any other activity which causes land to be exposed to the danger of erosion, or which might create an alteration to an existing drainage-way or other component of the stormwater system or facility.

CONSTRUCTION ACTIVITY APPLICATION. The set of drawings, specifications, design calculations, SWPPP and other documents necessary to demonstrate compliance with this chapter.

DEPARTMENT OF PUBLIC WORKS. The City of Goose Creek Department of Public Works, the Director of Public Works or any of that Department's duly authorized representatives or designees.

DEVELOPER. Any person, or others who acts in his or her own behalf, that is required to submit an application for approval to disturb land or encroachment and is thereafter responsible for maintaining compliance with this chapter and conditions of the approved application.

DIRECTOR. The Director of Public Works of the City of Goose Creek.

EROSION. The general process by which soils or rock fragments are detached and moved by the action of wind, water, ice and gravity.

EASEMENT. 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 or her property for a specific purpose.

FLOOD/FLOODING. A temporary rise in the level of water which results in the inundation of areas not ordinarily covered by water.

HAZARDOUS MATERIAL. Any item or agent (biological, chemical or 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. A connection to a City of Goose Creek 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 Goose Creek).

ILLICIT DISCHARGE or **ILLEGAL DISCHARGE.** Any activity which results in a discharge to a City of Goose Creek stormwater management system, facility or receiving waters that is not composed entirely of stormwater except:

- (1) Discharge pursuant to a NPDES permit (other than the NPDES for the City of Goose Creek); and
- (2) Discharges resulting from the fire-fighting activities.

IMPROPER DISPOSAL. 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 the substances.

LOW IMPACT DEVELOPMENT (LID). A set of principles and design components used to manage stormwater runoff by mimicking natural conditions and limiting pollutant transport through source control.

MAINTENANCE. 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 chapter and to prevent structural failure of the components.

MS4. Municipal separate storm sewer system and includes all conveyances, or system of conveyances, (including roads with drainage systems, highways, right-of-way, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, storm drains, detention ponds and other stormwater facilities) which inlets, transports, stores or treats stormwater runoff and which is:

- (1) Owned or operated by the City of Goose Creek;
- (2) Designed or used for collecting or conveying stormwater;
- (3) Not a combined sewer system; and
- (4) Not part of a publicly owned treatment works (POTW).

NEW DEVELOPMENT or RE-DEVELOPMENT. Any of the following actions undertaken by any person, including, without limitation, any public or private individual or entity:

- (1) Division of a lot, tract or parcels or other divisions by plat or deed;
- (2) The construction, installation or alteration of land, a structure, impervious surface or drainage facility;
- (3) Clearing, scraping, grubbing or otherwise significantly disturbing the soil, vegetation, mud, sand or rock of a site; or
- (4) 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. National Pollutant Discharge Elimination System.

NPDES PERMIT. The NPDES permit for stormwater discharges issued by SCDHEC, pursuant to the Clean Water Act and the federal stormwater discharge regulations (40 C.F.R. 122.26), that allows for restricting pollutant loads as necessary to meet water quality standards.

OPERATOR. 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. The point where a City of Goose Creek stormwater management system or facility or other municipal and private systems discharges to waters of the state and/or United States.

OWNER. The property owner, or any person who acts in his or her 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. 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. Anything which may cause or contribute to exceedences 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. 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. Any regulation, rule or requirement prepared by and/or adopted by the Goose Creek City Council pursuant to this chapter.

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

STORMWATER. Stormwater runoff, snow melt runoff and surface runoff and drainage.

STORMWATER MANAGEMENT. The collection, conveyance, storage, treatment and disposal of stormwater runoff in a manner to meet the objectives of this chapter 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 human-made changes to the land.

STORMWATER MANAGEMENT SYSTEMS and FACILITIES. 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.

SWMP. The City of Goose Creek Stormwater Management Program, which may describe the components to be used by the City of Goose Creek to control stormwater discharges, address flooding and meet water quality standards.

TMDL. A regulatory value developed to represent the amount of a pollutant that a water body can incorporate while meeting water quality standards. **TMDL** are further defined as the legal document developed by EPA and SCDHEC designating the pollutant load a permitted discharge is allowed to input into a water body.

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

WATERCOURSE. Any natural or man-made conveyance used to transport runoff from one location to the next.

WATERSHED. A drainage area or drainage basin contributing to the flow of stormwater into a receiving watercourse or water body.

WATER QUALITY. Those characteristics of stormwater runoff that relate to the physical, chemical, biological or radiological integrity of water.

WATER QUANTITY. Those characteristics of stormwater runoff that relate to the rate and volume of the stormwater runoff.

(Ord. 07-017, passed 11-13-2007)

ORGANIZATION AND ADMINISTRATION

§ 50.030 CITY OF GOOSE CREEK STORMWATER MANAGEMENT PROGRAM (SWMP).

The SWMP, developed by the City of Goose Creek to implement the purposes of this chapter, shall serve as the basis for directing the City of Goose Creek's efforts to control stormwater. The SWMP is incorporated by reference and is hereby a part of this chapter. The SWMP requirements are to be complied with and shall be enforced in accordance with the provisions of this chapter.

(Ord. 07-017, passed 11-13-2007)

§ 50.031 COORDINATION WITH OTHER AGENCIES.

The Department of Public Works may coordinate the City of Goose Creek's activities with other federal, state and local agencies, which manage and perform functions relating to the protection of receiving waters through written agreement. Authority not expressly reserved for other agencies or

restricted by statute is placed with the City of Goose Creek for the protection and preservation of receiving waters. The Department of Public Works should coordinate with state and federal agencies having jurisdiction.

(Ord. 07-017, passed 11-13-2007)

§ 50.032 RIGHT-OF-ENTRY.

(A) The Director of Public Works or his or her designee, shall have right-of-entry on or upon the property of any person subject to this chapter issued hereunder. The Director of Public Works or his or her 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 chapter. If access is not required by an emergency, access shall be granted during the reasonable hours of 7 a.m. to 8 p.m. Access occasioned in whole or in part by an emergency causing actual or perceived risk of harm to persons or property shall be granted at any time.

(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 Director of Public Works, or his or her designee, will be permitted to enter without delay for the purposes of performing the responsibilities identified in division (A) above.

(Ord. 07-017, passed 11-13-2007)

STORMWATER QUANTITY AND QUALITY MANAGEMENT REQUIREMENTS

§ 50.050 REGULATIONS.

(A) The Director of Public Works shall be responsible for day-to-day coordination, implementation and enforcement of this chapter and the SWMP, as well as the long-term management of the City of Goose Creek's drainage.

(B) Without limitation, the Department of Public Works shall have the following authority:

(1) To issue any approval, certification or license that may be required to comply with this chapter;

(2) To deny a facility connection to a City of Goose Creek stormwater management system or facility or discharge to waters of the state, if state requirements and this chapter are not met;

(3) To create and enact the City of Goose Creek *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 chapter. Goose Creek City Council shall approve the original adoption and subsequent revisions of this manual;

(4) To require the submittal of an application for all applicable construction activities that result in a construction activities altering an 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 the City of Goose Creek *Stormwater Design Standards Manual*;

(5) To require the development of a Stormwater Pollution Prevention Plan (SWPPP) for all applicable new and re-development projects and enforcement of the SWPPP;

(6) To approve applicable construction activities and to require as a condition of the 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;

(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 Department of Public Works pursuant to this chapter, the SWMP and federal and state laws. The Department of Public Works 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 chapter, 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 determine appropriate fees, to impose penalties and to take necessary and appropriate actions to enforce this chapter; and

(11) To require encroachment permits as necessary.

(Ord. 07-017, passed 11-13-2007)

§ 50.051 PROHIBITIONS AND EXEMPTIONS.

(A) 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 property boundaries, without having provided for compliance with this chapter.

(B) In cases where an imminent threat to the health or safety of the general public or the environment is suspected, the Director of Public Works or his or her designee shall perform the responsibilities to determine if immediate action is necessary. The responsibilities may be made with or without the consent of the owner or operator. If consent is refused, the Director of Public Works or his or her designee, may utilize the enforcement measures authorized in this chapter to remove the 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 the costs against the property, file an action in magistrate or civil court for recovery of incurred expenses and enforce the actions in magistrate or civil court.

(C) The following development activities are exempt from the provisions of this chapter.

(1) Land disturbing activities undertaken on forest land 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. Code § 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 aqua-culture. 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 construction activity application prior to the start of the land disturbing activity.

(D) Linear utility installation activities that are covered under their own SCDHEC approved utility general permit requiring associated assurance of proper stormwater management.

(Ord. 07-017, passed 11-13-2007) Penalty, see § [50.999](#)

§ 50.052 DESIGN AND ENGINEERING STANDARDS.

(A) 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 chapter. The standards establish the minimum technical requirements needed to express compliance through calculations, maps and drawings, or others as necessary.

(B) The Department of Public Works is authorized to develop and adopt policies, criteria, specifications and standards for the proper implementation of the requirements of this chapter, 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 a *Stormwater Design Standards Manual*.

(C) 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. 07-017, passed 11-13-2007)

§ 50.053 CONSTRUCTION ACTIVITY APPROVAL PROCESS.

(A) A submittal shall be made for all applicable construction activities for review by the Department of Public Works. The entire application process and requirements may be described in a *Stormwater Design Standards Manual*.

(B) 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 chapter, the SWMP and other state and federal regulations.

(Ord. 07-017, passed 11-13-2007)

§ 50.054 STORMWATER DESIGN STANDARDS MANUAL.

(A) The Department of Public Works is authorized to develop and adopt a *Stormwater Design Standards Manual*.

(B) The 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.

(C) 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.

(D) Other accepted engineering procedures may be used to conduct hydrologic, hydraulic and pollutant load studies if approved by the Department of Public Works.

(E) The manual, if adopted, shall contain, at a minimum, the following components:

(1) Construction activity application contents and approval procedures;

(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 redevelopment 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 Goose Creek and the public health, safety and general welfare of the citizens of the City of Goose Creek;

(5) Construction document requirements;

(6) Minimum easement requirements; and

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

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

(Ord. 07-017, passed 11-13-2007)

§ 50.055 OWNERSHIP AND 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 an approved application for construction activity, 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 operator's 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 Goose Creek a perpetual, non-exclusive, 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 Director of Public Works or his or her designee, the property owner shall grant to the City of Goose Creek rights-of-way.

(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 and/or the South Carolina Department of Transportation (SCDOT), shall be responsible for maintenance activities for stormwater collection/conveyance systems associated with county/state accepted public roads and projects.

(E) The City of Goose Creek 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. Failure to perform the activities will constitute a violation of this chapter.

(G) If a facility or any portion of the stormwater system is not being maintained as required, the Director of Public Works, or his or her 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 Department of Public Works may authorize the work to be performed by the City of Goose Creek 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 the costs against the property, file an action in magistrate or civil court for recovery of incurred expenses, and enforce the actions in magistrate or civil court.

(H) A property owner or operator may hire or contract others to perform necessary maintenance actions, but the City of Goose Creek will hold the person named in the Covenants as the responsible party, should legal actions described in division (G) above be necessary.

(I) When the Director of Public Works or his or her 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 Goose Creek 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 a facility; and

(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. 07-017, passed 11-13-2007)

§ 50.056 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 the City of Goose Creek.

(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 the facility shall specifically agree through signature of Covenants to be responsible for keeping the system and facilities in working order. The Department of Public Works shall develop procedures to provide reasonable assurance that maintenance activities are performed for both public and privately maintained systems. The Department of Public Works shall also define procedures for transferring maintenance responsibilities to another entity.

(B) The Department of Public Works shall define procedures for conducting site inspections during construction and until a stormwater management system or facility is no longer in use. The inspections may be performed by city staff, Berkeley County staff or an approved Inspector. The City of Goose Creek has the authority to levy fines 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 construction and BMP maintenance and inspection schedules. Required and recommended schedules for BMP maintenance and inspection are to be provided in the *Stormwater Design Standards Manual*.

(D) 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 the conditions shall be developed.

(E) The applicant shall notify the Director of Public Works or his or her 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 for in the *Land Development Manual*. All self-inspections, maintenance actions, BMP replacements and changes to the approved application shall be documented and presented upon request to the Director of Public Works or his or her designee.

(F) The construction project completion and closeout process must be completed by the Department of Public Works 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 Berkeley County and/or SCDOT road inventory or designation of road owner and associated stormwater management system;
- (3) Release of any bond held by the City of Goose Creek; and
- (4) 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. 07-017, passed 11-13-2007)

§ 50.057 WATERCOURSE PROTECTION.

(A) 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 the structures will not become a hazard to the use, function or physical integrity of the watercourse.

(B) To assist in the compliance with state and federal laws and regulations, the Department of Public Works may develop special protection areas which require additional control of stormwater quality and quantity than provided by minimum design standards. The 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 Goose Creek and the public health, safety and general welfare of the citizens of the City of Goose Creek. These areas can be expected to change with time as development continues and as federal and state law demands.

(C) New stormwater systems created as the result of any new and redevelopment 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 man-made, and shall have demonstrated this to the Department of Public Works prior to project closeout. Discharge points shall be confined to connections with an existing natural or human-made drainage system. When stormwater discharges are to flow into collection systems not owned and maintained by the City of Goose Creek, the owners of these systems shall maintain the right to disapprove new connections to their system.

(Ord. 07-017, passed 11-13-2007)

§ 50.058 NOTIFICATION OF SPILLS.

(A) 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, the person shall take all necessary steps to discover, contain and cleanup any releases.

(B) The person shall also take immediate steps to protect against future recurrences of the discharge. In the event of a release of hazardous materials, including but not limited to oils, greases, engine fluids and fuels, chemicals, herbicides and pesticides, and fertilizers, the person shall immediately notify all necessary agencies of the occurrence via emergency dispatch services.

(C) This shall include the City of Goose Creek Fire Department, Police Department and Department of Public Works. The notifications of hazardous spills shall be confirmed by written notice addressed and mailed to the Department of Public Works within five business days of the spill event.

(D) In the event of a release of non-hazardous materials, the person shall record an on-site written record of the spill.

(E) The owner or operator of the establishment shall retain an on-site written record of any and all spills that will include information on cleanup measures taken and the actions to prevent its recurrence.

(F) The records shall be retained for at least five years.

(G) Failure to provide notification of a release as provided above is a violation of this chapter.

(Ord. 07-017, passed 11-13-2007) Penalty, see § [50.999](#)

§ 50.059 CLEANUP PROCEDURES.

The City of Goose Creek 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 the actions.

(Ord. 07-017, passed 11-13-2007)

DETECTION AND ELIMINATION OF ILLICIT DISCHARGES AND IMPROPER DISPOSAL

§ 50.075 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 Department of Public Works stormwater management system or facility or a water of the state.

(B) It is unlawful for any person to continue the operation of any illicit connection regardless of whether the connection was permissible when constructed. Improper connections in violation of this chapter must be disconnected and redirected, if necessary, to the satisfaction of the Director of Public Works or his or her 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 Goose Creek stormwater management system or facility or to the 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 Department of Public Works.

(D) The Department of Public Works shall develop procedures for detecting, tracking and eliminating illicit discharges and improper disposals to the stormwater system.

(E) The Director of Public Works or his or her designee, may require controls for, or exempt from, the prohibition provision in divisions (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 Director of Public Works or his or her designee and if 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, de-chlorinated swimming pool discharges, flows from riparian habitats and wetlands and street wash water; and

(4) Discharges or flows from fire fighting.

(F) The Department of Public Works may develop procedures for allowing other non-stormwater discharges.

(Ord. 07-017, passed 11-13-2007) Penalty, see § [50.999](#)

§ 50.076 DETECTION OF ILLICIT CONNECTIONS AND IMPROPER DISPOSAL.

(A) The Department of Public Works shall take appropriate steps to detect and eliminate illicit connections to the City of Goose Creek stormwater system, 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) (1) The Department of Public Works shall take appropriate steps to detect and eliminate improper discharges.

(2) 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.

(Ord. 07-017, passed 11-13-2007)

§ 50.077 WASTE DISPOSAL PROHIBITIONS.

(A) 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 water of the United States, 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.

(B) 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.

(C) Wastes in proper waste receptacles may be placed in the street for collection, but again only if collection by or through the City of Goose Creek is in place.

(D) No waste or yard debris shall be placed in the street without a collection service.
(Ord. 07-017, passed 11-13-2007) Penalty, see § [50.999](#)

Cross-reference:

Prohibitions on waste disposal, see also §§ [70.21](#) and [93.086](#)

MONITORING AND INSPECTIONS

§ 50.090 MONITORING.

The City of Goose Creek Department of Public Works may monitor the quantity and concentration of pollutants in stormwater discharges from the areas and/or locations designated in the City of Goose Creek's SWMP.

(Ord. 07-017, passed 11-13-2007)

§ 50.091 INSPECTIONS.

(A) The Director of Public Works or his or her 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 chapter and the SWMP programs. The Director of Public Works or his or her designee, shall duly notify the owner of the 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 Director of Public Works or his or her designee, shall document the refusal and the grounds for such and promptly seek appropriate compulsory process.

(C) In the event that the Director of Public Works or his or her designee reasonably believes that discharges from the property into a City of Goose Creek 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 permanent file located at the Department of Public Works.

(E) At any time during an inspection or at other times as the Director of Public Works or his or her designee may request information from an owner or representative, the owner or representative may identify areas of his or her facility or establishment, material or processes that contain or might reveal a trade secret. If the Director of Public Works or his or her designee, has no clear and convincing reason to question the identification, all material, processes and information obtained within the 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 the designation. In the event the Director of Public Works or his or her 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 Director of Public Work's decision in the manner in which all the appeals are handled in this chapter.
(Ord. 07-017, passed 11-13-2007)

ENFORCEMENT, PENALTIES AND ABATEMENT

§ 50.105 ENFORCEMENT.

(A) (1) When the Director of Public Works or his or her designee finds that work done for new development and redevelopment fails to conform to the approved construction activity application, or that the work has not been done, the Director of Public Works or his or her designee may, as deemed necessary and after due process, by written notice of violation (NOV), direct conformity to the approval(s). Actions may include:

- (a) Issuing a written order to comply, to suspend work or to revoke the approval issued;
- (b) Seeking redress through legal action;
- (c) Withholding the release of permanent electric power to the site or certificate of occupancy;
- (d) Withholding or revoking other permits related to the site; and/or
- (e) Levying fines.

(2) 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 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 Director of Public Works or his or her designee is hereby given the authority to levy fines as described in this section.

(B) When the Director of Public Works or his or her 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 the 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 Director of Public Works or his or her designee determines that an owner of any property is causing or partially causing flooding, erosion or noncompliance with water quality standards or this chapter, upon providing valid proof of the impacts, the Director of Public Works or his or her 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 Director of Public Works or his or her designee is hereby given the authority to levy fines as described in this section.

(D) The City of Goose Creek Attorney is hereby directed to take all legal actions necessary to correct situations described in divisions (A), (B) and (C) above, including actions that are necessary to remove from the property the objectionable conditions constituting noncompliance with this chapter.

(E) Nothing contained in this chapter shall impair the right or ability of the City of Goose Creek 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 chapter, and any person damaged as a result of the violations may, upon a proper showing of the damages, obtain payment therefor by a civil action.

(G) This chapter may be enforced by any other remedy of law or equity that the City of Goose Creek 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 chapter are cumulative and not exclusive, and may be independently and separately pursued against the same person for the activity constituting a violation of this chapter. 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 City of Goose Creek shall provide due process into the enforcement of violations so as to provide owners, operators and other responsible parties the abilities to resolve the violations in a timely manner before facing fines and civil and criminal penalties. It is the intent of this chapter that violators be given appropriate due processes.

(Ord. 07-017, passed 11-13-2007)

§ 50.106 ADDITIONAL LEGAL MEASURES.

(A) Where the City of Goose Creek is fined and/or placed under a compliance schedule by the state or federal government for a violation(s) of its NPDES permit, and the City of Goose Creek can identify the person(s) who caused the violation(s) to occur, the City of Goose Creek may pass through the penalty and cost of compliance to that person(s).

(B) The City of Goose Creek Attorney may institute injunctive, mandamus or other appropriate action or proceedings at law or equity, including criminal conviction, for the enforcement of this chapter or to correct violations of this chapter, 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. 07-017, passed 11-13-2007)

§ 50.107 CRIMINAL PENALTIES.

In addition to any applicable civil penalties, any person who willfully, with wanton disregard, or intentionally violates any provision of this chapter 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.

(Ord. 07-017, passed 11-13-2007)

§ 50.108 CORRECTIVE ACTION.

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

(Ord. 07-017, passed 11-13-2007)

§ 50.109 STOP WORK.

(A) The Director of Public Works, his or her 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 chapter.

(B) (1) 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.

(2) 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. 07-017, passed 11-13-2007)

§ 50.110 APPLICATION 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;
- (B) Construction is not in accordance with the letter or intent of the approved plans;
- (C) Noncompliance with correction notice(s) or stop work order(s);
- (D) The existence of an immediate danger to a downstream area in the judgment of the Director of Public Works or his or her designee; and
- (E) Other violations of this chapter.

(Ord. 07-017, passed 11-13-2007)

VARIANCES, APPEALS AND CHARGES

§ 50.125 DESIGN CRITERIA.

The Department of Public Works 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 of Goose Creek;

(B) The variance will not adversely affect the reasonable development of adjacent property;

(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;

(D) The variance is consistent with the objectives of this chapter and will not have the effect of nullifying the intent or purpose of this chapter, or any other pertinent city, county or state statute; and

(E) (1) 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.

(2) The request shall include all information necessary to evaluate the proposed variance.

(Ord. 07-017, passed 11-13-2007)

§ 50.126 APPEAL PROCESS.

(A) Any person aggrieved by a decision, notice of violation or denial of a variance by the Director of Public Works or his or her designee may appeal the same by filing a written notice of appeal with the City Administrator within 30 days of the issuance of the decision, notice of violation or denial of a variance. The City Administrator will review the appeal and will either reverse or preserve the previous decision. In either case, the decision of the City Administrator will be in writing and will state the rationale for the appeal decision.

(B) The City Administrator shall hear and determine the appeals in a quasi-judicial capacity within 45 days or other times as may be mutually agreed upon and will render a decision within ten working days after the appeal has been heard.

(C) Any person aggrieved by the decision of the City Administrator may appeal the decision to the Goose Creek City Council in accordance with its rules and procedures.

(Ord. 07-017, passed 11-13-2007)

§ 50.127 FUNDING.

In addition to all other charges, fees and penalties, the City of Goose Creek shall have the right to develop and impose a stormwater service fee to fund implementation of this chapter and its associated programs and plans. Establishment and revision of the fees shall be approved by the

Goose Creek City Council.
(Ord. 07-017, passed 11-13-2007)

§ 50.128 CONNECTION TO CONVEYANCES.

The Department of Public Works shall have the right to establish a schedule of appropriate fees for any person or property owner establishing a new discharge to waters of the state within the City of Goose Creek or to a wet weather conveyance. The fee shall be payable as part of any application regulating the discharge of stormwater runoff (i.e. plan review 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 the fees shall be approved by the Goose Creek City Council.

(Ord. 07-017, passed 11-13-2007)

§ 50.129 PLAN REVIEW.

Costs associated with plan review of land development construction documents, other than those routinely performed by the Department of Public Works, may be assessed a fee representing the cost in labor, equipment and materials expended in the conduct of the review. Establishment and revision of the fees shall be approved by the Goose Creek City Council.

(Ord. 07-017, passed 11-13-2007)

§ 50.130 FIELD INSPECTION.

Costs associated with field inspection and re-inspections of land development or construction activities other than those routinely performed by the Department of Public Works 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. Establishment and revision of the fees shall be approved by the Goose Creek City Council.

(Ord. 07-017, passed 11-13-2007)

§ 50.999 PENALTY.

Any person violating any provision of this chapter shall be subject to a fine of not more than \$500 for each violation. Each separate day of a violation constitutes a new and separate violation.

(Ord. 07-017, passed 11-13-2007)

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Ordinance No. 9-2014

Stormwater Management Ordinance,
City of Hanahan, SC

December 9, 2014

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DIVISION 1 GENERAL PROVISIONS

Sec. 1.1 Title.

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. 1.4 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 to 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 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 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. 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.

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 Repealed.

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 publications 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 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 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 runoff.

“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 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 connection to a 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 a 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 State/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 exceedences 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.

- (a) 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 (a).

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 amendments 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 ½ 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 the 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/or 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 of 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/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.

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 a 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 seek 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 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 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 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 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 ENFORCEMENT, PENALTIES, AND ABATEMENT

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 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; and/or
 - (4) withholding or revoking other permits related to the site.

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 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 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 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) This 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/or 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 its 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.

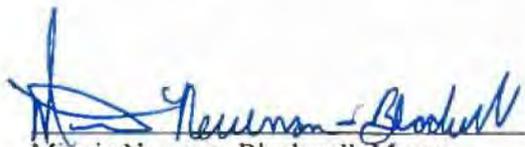
Sec. 9.4 Field inspection.

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, 20 14.


Minnie Newman-Blackwell, Mayor

ATTEST:


Kim Peters, Clerk of Council

Introduced by: _____

First Reading: 12 NOVEMBER 2014

Second Reading: 9 DECEMBER 2014

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

Final



Berkeley County Stormwater Illicit Discharge Detection and Elimination Manual

Prepared by:

AECOM

Project #60552634

February 2018



AECOM

FINAL



Berkeley County Stormwater

Illicit Discharge Detection and Elimination
Standard Operating Procedures Manual

Berkeley County, South Carolina

2 February 2018

Prepared by:

AECOM

Project #60552634

Record of Revisions

DESCRIPTION OF REVISION	DATE	PREPARED BY
Original Manual	June 2010	Woolpert, Inc.
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Statement of Limitations

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Section 1 Project Overview

1.1 Introduction and Purpose of SOP

An understanding of the nature of illicit discharges in urban watersheds is essential to find, eliminate, and prevent them. This document is provided as a revision to the original June 2010 Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures (SOP) Manual for Berkeley County (County). The manual herein has been revised to adhere to current requirements, at the time of publication, for National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Separate Storm Sewer Systems (MS4) communities. The State of South Carolina NPDES General Permit for Stormwater Discharges from Regulated Small Municipal Separate Storm Sewer Systems (MS4 Permit) requires the County to develop and implement an 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 section provides the specific requirements from the NPDES Phase II permit and definitions. These requirements are addressed as part of this manual and the associated County Stormwater Management Plan (SWMP). **Section 2** provides a summary of the County's IDDE program processes and procedures. **Section 3** provides an overview of dry weather field screening procedures, data collection and data management as outlined in the *Berkeley County Stormwater GIS/GPS Procedures Manual (GIS/GPS Manual)*, February 2018 edition. **Section 4** describes the field procedures for illicit discharge detection, tracing, and elimination. Appendices are included which provide supplemental and detailed information for sampling procedures, GIS applications, reporting forms, and technical references.

1.2 Permit Requirements

The procedures outlined within this manual are specifically designed and implemented to assist the County with outfall inventorying and screening to ensure compliance with the regulations outlined below within the MS4 limits of the unincorporated area of Berkeley County. Additionally, in October 2015, Berkeley County entered into an intergovernmental agreement (IGA) with the incorporated municipalities of Hanahan and Goose Creek. As part of this agreement, Berkeley County is responsible for developing and implementing the stormwater program for these municipalities. This includes the implementation of the IDDE program. With this IGA in place, all regulatory references in this document referring to "Berkeley County" or the "County" include Hanahan and Goose Creek, by reference, through the stipulations of the IGA.

In accordance with the MS4 Permit (Permit No. SCR030000) the County must develop an IDDE program that complies with the following requirements:

- The County shall develop, implement and enforce a program to detect and eliminate illicit discharges into the MS4. The IDDE program must include the following:
 - Develop a storm sewer system map showing the location of all outfalls, and names and location of all waters of the United States that receive discharges from those outfalls.
 - Identify priority areas (i.e. problem areas) for more detailed screening of the system based on higher likelihood of illicit connections (e.g. areas with older sanitary sewer lines), and/or conduct ambient sampling to locate impacted reaches. This priority area list must be updated annually to reflect changing priorities.
 - The County must implement written dry weather field screening and analytical monitoring procedures to detect and eliminate illicit discharges to the MS4. Dry weather field screening may consist, but is not limited to, (1) visual observations; (2) field screening monitoring; and may include (3) analytical laboratory monitoring at selected points to the extent necessary to identify and eliminate an illicit discharge.
 - The County must conduct dry weather field screening, and/or analytical monitoring, when necessary, to identify the source of illicit discharges. At a minimum, they must:
 - Identify all field screening points within the priority areas identified above where field screening and analytical monitoring, if warranted, will take place.
 - Identify the areas and the schedule for conducting the screening, the proposed location of outfalls or field screening points which may reflect water quality concerns, and to protect water quality to the MEP.
 - Provide a description of which screening methods will be used and a description as to why it is appropriate for each area.
 - Identify field screening equipment with their respective methodologies for use.
 - Conduct all dry weather visual observations and required field screening at each outfall. All dry weather screening activities should be conducted after 72-hours of continuous dry conditions consisting of less than 0.10-inch of rainfall.
 - Document elimination of the illicit discharge.

- If another operator/MS4 notifies the County of an illegal connection or illicit discharge to the MS4 system, the County is required to conduct follow-up investigation and corrective action as described below.
- The County is required to develop written procedures for conducting investigations into the source of all identified illicit discharges, including approaches to requiring such discharges to be eliminated.
- At a minimum, after becoming aware of an illicit discharge, the County is required to initiate an investigation(s) to identify and locate the source of any continuous or intermittent non-stormwater discharge within a timeframe that is consistent with the procedures found in the County's SWMP.
 - The County must report immediately the occurrence of any dry weather flows believed to be an immediate threat to human health or the environment to the South Carolina Department of Health and Environmental Control (SCDHEC) Emergency Response at 1-888-481-0125.
 - Illicit discharges suspected of being sanitary sewage and/or significantly contaminated must be considered a high priority and addressed in a timeframe consistent with the procedures found in the County's SWMP.
 - 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 adverse impact to either human health or water quality have been investigated, eliminated, and/or resolved.
 - The County must track all investigations to document at a minimum (a) the date(s) the illicit discharge was observed, (b) the results of the investigation, (c) any follow-up of the investigation, and (d) the date the investigation was closed.
- The County is required to determine and document through their investigations the source of all documented 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 must be notified.
 - If an illicit discharge is found, but within six months of the beginning of the investigation neither the source nor the same non-stormwater discharge has been identified/observed, then County must maintain written documentation for review by the permitting authority.
 - If the observed discharge is deemed to be intermittent, the County must document that a minimum of three separate investigations were made to observe the discharge when it was flowing. The County should periodically recheck these suspected intermittent discharges for potential illicit discharge.

- Once the source of the illicit discharge has been determined, the County shall:
 - Notify the responsible party of the problem in a timeframe consistent with the procedures found in the County's SWMP.
 - 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, the County shall require responsible parties to submit a plan with a schedule for elimination.
 - The County shall conduct a follow-up investigation and field screening to verify that the discharge has been eliminated upon being notified that the discharge has been eliminated.
- The County must promote, publicize, and facilitate a reporting mechanism for the public and staff to report illicit discharges and establish and implement citizen request response procedures.
 - The County must 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.
 - The County must conduct reactive 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.
- The County must implement a training program for all appropriate municipal field staff that may come into contact with or otherwise observe an illicit discharge or illicit connection to the storm sewer system.

1.3 Important Terminology and Key Concepts

The following is a summary of key terms and concepts that are referenced and used throughout this manual with respect to dry weather screening, illicit discharge detection, sampling, reporting, and source tracing.

Authorized Non-Stormwater Discharges – Non-stormwater discharges (e.g. non-commercial or charity car washes, etc.) that discharge less than significant quantities of pollutants to the MS4, due to either the nature of the discharges or because there are conditions the 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, Best Management Practices (BMPs) on the wash water, etc.), are allowed. The County is authorized (in their MS4 Permit) to discharge the following non-stormwater sources provided that SCDHEC 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 firefighting activities

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 waste* 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.
- *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, joints, or where open channels or pipes associated with the MS4 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.

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.

Illicit Discharge – "Illicit Discharge" or "Illegal Discharge" means any activity which results in a discharge to a 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 the County) and (b) discharges resulting from the fire-fighting activities.

Illicit Discharges Types – The three major categories of illicit discharges most commonly found are as follows:

Pathogenic and toxic discharges should be considered the most severe since contact or consumption of stormwater contaminated by these discharges could cause illness and significant water treatment problems for downstream users. These discharges may contain hazardous pollutants originating from:

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

Nuisance Discharges may contain pollutants that have the potential to contribute to aquatic life threatening conditions in the storm drainage system. These pollutants can cause excessive dissolved oxygen depletions, tastes, odors, 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
- 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
- Infiltration from potable waterline leaks

Pathogenic and nuisance discharges 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 discharge tracing efforts should make use of the illicit discharge tracing procedures outlined in this manual. Additional outfall inventory or illicit discharge tracing projects, already in progress, can enter the procedural flowchart at any time and work towards completion.

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 two main situations where this occurs are:

- **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.
- **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:

- **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.
- **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.
- **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.
- **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, parking lots (power washing), and construction equipment cleanouts may result in unacceptable pollutant loads.
- **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.

MS4 – An MS4 is a conveyance or system of conveyances that is (a) owned by a state, city, town, village, or other public entity that discharges to waters of the U.S., (b) designed or used

to collect or convey stormwater (e.g., storm drains, pipes, ditches), (c) not a combined sewer, and (d) not part of a sewage treatment plant or publicly owned treatment works (POTW).

Outfall – means a point source as defined by section 122.2 of SC Regulation 61-9 at the point where an MS4 discharges to waters of the State and does not include open 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.

Partner MS4 – Any municipality in which the County agrees to do all or part of the municipality's stormwater management program through a legal contract. At the time of publication of this manual, this includes the city of Hanahan and town of Goose Creek.

Point Source – means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel, or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture.

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.

Regulated Area – The regulated area refers to the boundaries of Berkeley County's urbanized areas, as well as any Partner MS4, 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).

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 discharge based on an analysis of samples taken.

Section 2 Summary of County IDDE Procedures

This section provides a summary of the County's IDDE program structure and reporting mechanisms. This section provides the framework and contact information for reporting illicit discharges within the MS4 area. As the County's MS4 is bounded by multiple other MS4s, it is important to coordinate between MS4s in the event of a multi-jurisdictional illicit discharge, as it impacts adherence to permit requirements for all municipalities involved.

All illicit discharge reporting within the County begins with notification of the County's Engineering Department. Once the Engineering Department is notified, it should be determined whether additional MS4s should be included as part of the illicit discharge reporting. Figure 2.1 provides a flowchart summarizing the County's IDDE program identification and notification procedures.

2.1 Illicit Discharge Identification Methods

There are a variety of sources and methods to identifying illicit discharges. Identification is expected to be achieved through outfall screening by the 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. The identification methods are described below:

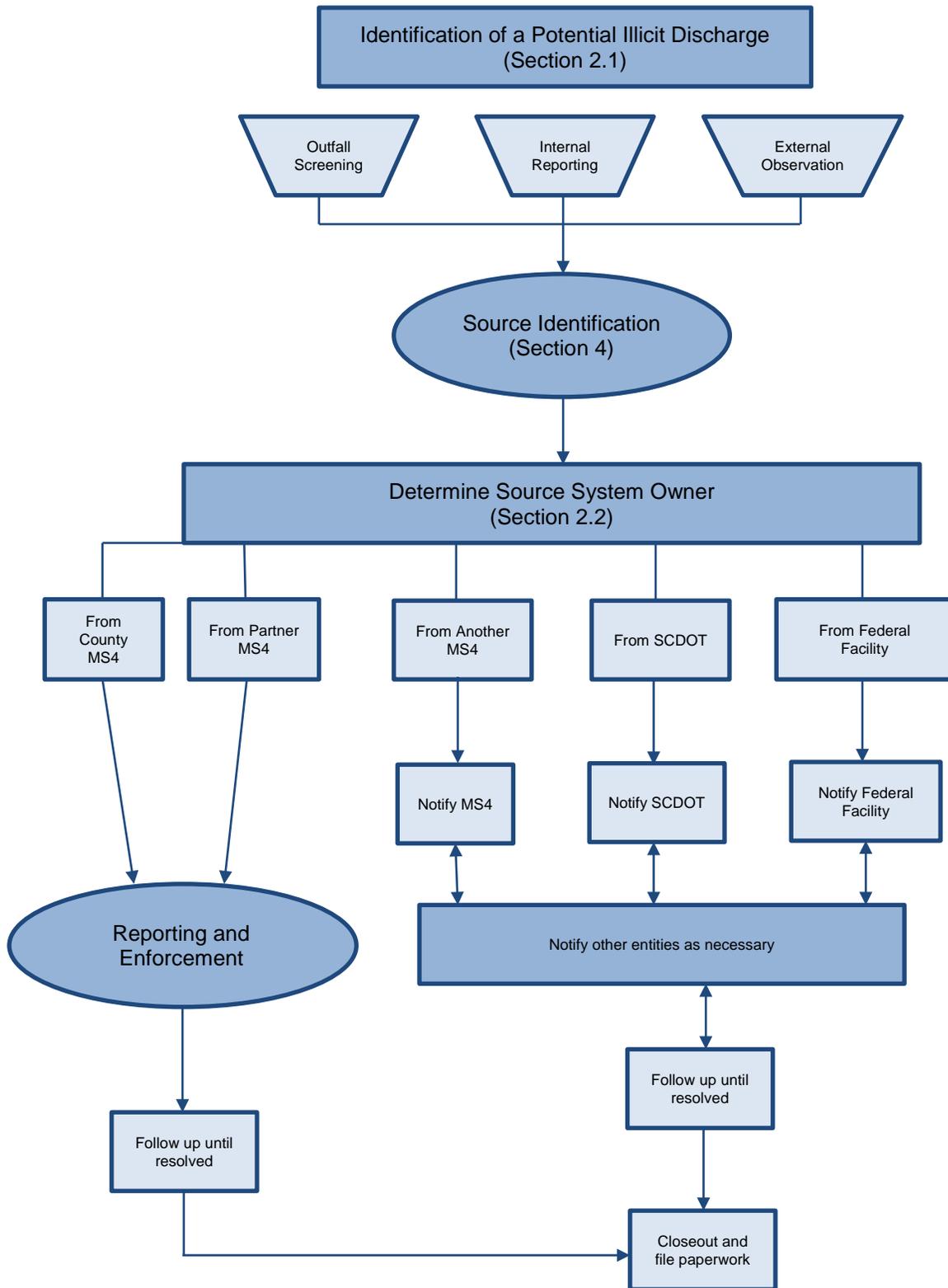
Outfall Screening – The Engineering Department is expected to find some potential illicit discharges through system inventory efforts for the County's MS4 Permit.

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.).

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.

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.

Figure 2.1 – IDDE Program Identification and Notification Procedures



2.2 Determination of Contributing System Owner

Once a potential illicit discharge is made known to the Engineering Department through one of the above referenced methods, field operations will commence to first determine the source of the potential illicit discharge based on regulatory and jurisdictional boundaries.

If the illicit discharge originates in and is discharging entirely within the limits of the County or a partner MS4, illicit discharge source identification will begin to determine the source and if the discharge is truly an illicit discharge, as defined in this manual (see Sections 3 and 4). Enforcement procedures will be implemented if necessary, to include follow-up field visits.

If the potential illicit discharge originates in, or discharges to another MS4 or a Federal Facility, that owner will be notified of the discharge by a letter from the County (Appendix F). The County will implement follow-up procedures for the potential illicit discharge. See Section 2.3 below for more detail related to the notifications. If the discharge presents a potential threat to human health or is of an immediate environmental concern, SCDHEC will be notified as soon as possible.

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 affect multiple owners. By first identifying all potential MS4s and Federal Facilities that may be impacted by the identified potential illicit discharge, the enforcement process can then begin, either initiated by the County, SCDHEC, or other MS4s.

2.3 Notification to Other MS4s, SCDHEC and Federal Facilities

If the source of the potential illicit discharge is neither the 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. Templates for illicit discharge notification letters are provided in Appendix F.

MS4s

City of North Charleston

5800 Casper Padgett Way
North Charleston, SC 29406
(843) 745-1026
Nima Moghadam

Town of Summerville

Department of Public Works
1105 Yancey Street
Summerville, SC 29485
(843) 851-4225
Rob MacDonald

Charleston County

County Stormwater Division
4045 Bridge View Drive
North Charleston, SC 29405
(843) 202-7600
Chris Wannamaker

City of Charleston

2 George Street
Charleston, SC 29401
(843) 724-3757
Kinsey Holton

Dorchester County

2120 East Main Street
Dorchester, SC 29437
(843) 832-0070
Mike Goldston P.E.

Georgetown County

129 Screven Street
Georgetown, SC 29440
(843) 545-3524
Tracy Jones, P.E.

SCDOT

P.O. Box 191
Columbia, SC 29202
(803) 737-0998
Jay Hawkins, P.E.

Federal Facilities

Naval Weapons Station, Charleston
2316 Red Bank Rd
Goose Creek, SC 29445
(843) 963-5608

SCDHEC

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

2.4 Follow-up Procedures

The Engineering Department must routinely follow-up on notifications sent to other entities described above to ensure permit compliance. 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 4.4.

Section 3 Dry Weather Field Screening

3.1 Background

Outfall identification involves the location and classification of all outfalls within the MS4 area that drain directly to receiving waters (streams, ponds, lakes, rivers) of the State. These outfalls are predominantly pipes, culverts, channels, bridges, or emergency spillways. The identification of these outfalls is not only required as part of the NPDES permit, but is necessary to identify potential sources of water quality problems within the MS4.

The outfall identification process should be implemented as a multi-tiered approach that both identifies the outfall structures and indicates the potential presence of illicit discharges at the outfalls. In order to accomplish these combined tasks, the outfall identification should be performed only during dry weather. This is also known as **dry weather field screening**. *Dry weather is defined as a 72-hour period with no runoff-producing rainfall (rainfall less than 0.1 inches). However, due to topographic constraints, flatter areas often will exhibit runoff for longer than 72 hours. Thus, field conditions should be assessed during the investigation.*

The following procedures should be followed for screening of **all** regulatory outfalls as identified by the County or their designee. Upon completion of dry weather screening, if no discharge is present, the screening is considered complete and the field inspector can proceed to the next outfall. If flow is present, the field inspector shall initiate the illicit discharge detection procedures as outlined in Section 4 and associated Appendix B.

It should be noted that the GIS Database has been updated to allow for multiple records at each outfall location. Therefore, for each individual outfall, there is the potential to record multiple dry weather screening events, illicit discharge sampling, and illicit discharge tracing. This allows for the County to maintain an on-going record of all illicit discharge events within the system. This information can be utilized in determining priority areas for investigation in the future.

3.2 Initial Procedures

The proper procedures for Dry Weather Field Screening identified within this section should be followed wherever practicable. All information should be recorded. Where certain criteria cannot be obtained due to site specific constraints (standing water, broken pipe, etc.), this should be noted and reported to the Engineering Department. Additional field visits should be attempted if seasonal changes could alter the data collection limitations at the outfall.

Oftentimes, unanticipated conditions may be encountered in the field that are not addressed or covered in this manual. In those circumstances it is the responsibility of the field technician to notify the Engineering Department of these conditions. The Engineering Department will make the final decision on how to proceed with the field investigation in order to meet the conditions of the NPDES permit requirements for the MS4. All field work should be performed

under the direction of the Engineering Department. It is not up to the discretion of the field technician to determine the proper procedures in the case of unanticipated field conditions.

The following equipment should be on-hand during the dry weather field screening:

- Existing field maps
- Field data collection sheets (if applicable)
- Digital camera
- GPS unit with Data Dictionary loaded (see Appendix C)
- Spray paint or marking tape
- Cell phone
- Tape measure
- Appropriate Personal Protective Equipment (PPE)
- Clip board and pencils
- First Aid kit
- Sampling equipment (see specifications in Appendix B)

Prior to initiating dry weather field screening, it must be understood that the investigation may include investigation onto private property. While many outfalls are located within deeded and recorded drainage easements, many are not and it may be necessary to cross or enter privately held lands to record the necessary field information. Therefore, it is imperative that all property owners within the investigation area are identified as to the nature of the investigation. How this notification is disseminated is up to the discretion of the Engineering Department. However, at a minimum, field personnel are required to carry signed copies of the public notification letter located in Appendix C. Unless otherwise approved by the Engineering Department, no field investigation shall be initiated without prior notification to land owners. During the dry weather field screening, all field workers shall wear safety vests, typically blaze orange, and shall clearly identify themselves and their purpose to any citizen, if questioned.

3.3 Field Data Collection

The following data should be collected for every outfall identified during the dry weather screening process. A location coordinate should be recorded by means of a GPS unit as described in the GIS/GPS Manual. A tablet with onboard ESRI GIS and GPS software can be used for data collection. Appendix C identifies the information included in the Data Dictionary developed for the County, consistent with the GIS/GPS Manual, which will be used to collect outfall screening information. Wherever possible this format should be followed. In situations where a handheld GSP data collector cannot be used to identify a location coordinate, the information below should be collected and the Illicit Discharge Inspection Form should be completed, at a minimum, and the site marked or identified in such a manner, with flagging, paint, or other identification means, such that the location of the outfall can be clearly identified and recorded in the future to be included in the outfall database.

- Site information should be collected during dry weather conditions. Where this is not possible, such as in cases where outfalls are located during other routine County inspection activities, the site should be identified and a follow-up IDDE investigation should be performed at a future date.
- The outfall type (pipe, culvert, channel, bridge, emergency spillway, etc.) along with its shape, dimensions, and material composition should be recorded in accordance with the requirements of the GIS/GPS Manual.
- Digital photographs of the outfall should be taken. This photograph should be taken from such a perspective as to identify the outfall and other prominent features in the area in order to easily identify the outfall in the future if follow-up IDDE investigation is necessary.
- The outfall should be labeled with a unique identifier or AssetID. Where the dry weather screening involves screening of an existing mapped outfall that is contained in the GIS database, field staff will utilize the same AssetID for all follow up investigations to the same outfall. Where a new outfall is to be investigated, the last recorded AssetID number, per the County's outfall numbering convention, should be obtained from the database prior to dry weather field investigation. This AssetID should be recorded in the GPS unit and labeled on any field identification forms. It should be noted that the IDDE function of the GIS database has been developed as a "one to many" relationship, meaning that multiple inspections can be performed for each outfall without overwriting the data. Therefore, it is important to utilize existing AssetIDs to accurately track the inspection history of an individual outfall.
- Note any flow or discharge from the outfall. If the outfall does exhibit flow conditions during dry weather investigation, this should be noted, and physical assessment performed in accordance with the sampling procedures outlined in Appendix B. If physical assessment indicates the potential presence of an illicit discharge, chemical sampling should be performed in accordance with the procedures in Appendix B.
- It should be noted that standing water or submergence are not necessarily indicators of discharge, nor does it exclude the site from having a potential illicit discharge. In accordance with the County's investigation procedures, physical assessment should be completed for these outfalls, and subsequent chemical sampling completed if the physical assessment indicates the potential presence of an illicit discharge.
- Where dry weather field screening is performed on outfalls draining to tidal receiving waters, screening and sampling must be completed at mid-tide levels or lower. Investigation of tidal outfalls during high tide is not valid.

3.4 Recording Outfall Screening Data in GIS

Data collection will be managed through use of the GIS Data Dictionary which contains a list of data to be collected at every outfall within the County. The GIS Data Dictionary describes the

structure and content of the GIS database and provides details on what data to collect, and how to collect it. The GPS unit allows for the approximate x, y location and elevation (if GPS unit provides proper level of accuracy in accordance with the GIS/GPS Manual - not required as a dry weather screening activity) of each outfall site to be stored along with other pertinent data. The purpose of using a Data Dictionary is to standardize the collection of data in the field as personnel walk all streams and channels to find outfalls, record their location, and physically mark them with spray paint or a flag. Walking the streams also allows field personnel to identify illicit discharges and connections, areas of severe bank erosion, dry weather flows, blockages, and restrictions that may hinder the flow of streams.

A custom Data Dictionary has been developed for the County as part of their GIS database revisions. The setup of the Data Dictionary requires that the first piece of data entered at each outfall be the *swDischargePointType*. The *swDischargePointTypes* that will be encountered during this project include:

- Pipes
- Channels
- Bridges
- Culverts
- Emergency Spillways
- Other – If an outfall does not qualify as one of the above feature types, it should be classified as “other,” and detailed notes added to the comment field should be taken describing its physical appearance and other characteristics. Photographs of the outfall should also be taken.

Note: Occasionally an Inlet may be the final piece of infrastructure prior to discharge. However, in GIS, an Inlet is defined as a structure where water enters the stormwater system, so it cannot also be defined as a discharge point where water exits the system. In reality, an Inlet may be functioning as both, so note “Other” as to the *DischargePointType*.

Once the *DischargePointType* is entered, a list of the data to be collected, or verified, specific to that feature type is displayed, ensuring that all necessary information is collected at each site. Some of the information entered into the Data Dictionary includes the date of inspection, the type of outfall, the size of the outfall, weather conditions at the time of the inspection, and a description of the condition of the structure (this also allows County staff to address maintenance issues of that structure in an efficient manner if necessary). It should be noted that all outfalls are discharge points, but not all discharge points are outfalls. Field staff must enter NPDES yes/no in the Data Dictionary to identify the point as a regulated outfall.

Section 4 Illicit Discharge Source Identification

The next step has four primary components: (1) illicit discharge tracing to identify the source, (2) dry weather field screening to determine if the discharge is truly an illicit discharge, and (3) source identification, and (4) implement illicit discharge elimination through notification or enforcement. These steps apply only to the instances in which the potential illicit discharge is flowing into the MS4 owned either by the County or a partner MS4. Figure 4.1 is a flowchart summarizing the illicit discharge source identification procedures.

4.1 Potential Illicit Discharge Tracing

The first step in the source identification process is to trace the discharge 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 2.3 for notification procedures.

Field personnel will begin the tracing process at the potential illicit discharge during a dry weather condition. The procedure is the same regardless of how the discharge was discovered (outfall screening, internal reporting, or external observation).

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 personnel will record physical data from visual inspections. Field personnel should note odor, color, turbidity, the presence of floatables, stains, vegetation, and structural condition. A detailed description of these physical parameters can be found in Appendix A.
2. If physical screening indicates the potential presence of an illicit discharge, field personnel will conduct field chemical sampling **within 72 hours of the initial physical screening** to further investigate the potential illicit discharge. Bacterial sampling is only required if physical screening indicates the presence of one or more bacterial indicators of adverse colors, odor or floatables. If field chemical sampling indicates the presence of an illicit discharge, through exceedance of chemical parameters as outlined in Appendix A, field staff should begin source tracing procedures as follows:
 - a. If the discharge continues upstream and can be traced, move upstream in the direction of the discharge. Repeat step 1 at each drainage system junction until a) the source is found, b) the discharge can no longer be traced upstream (e.g. underground), or c) the discharge is determined to be originating from the jurisdiction of another MS4 or Federal Facility. No sample should be taken at any intermediate point if the discharge can be tracked further upstream.
 - b. If physical and/or chemical screening determines that the source of the illicit discharge is raw sewage, field personnel should immediately alert the County

Engineering Department to the presence of raw sewage. If the source is a sanitary sewer system, the County Engineering Department shall contact the appropriate sewer provider as soon as possible after the reporting of the illicit sewage discharge. 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
bcws.sc.gov

Summerville CPW

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

Charleston Water Systems (CWS)

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

Mount Pleasant Waterworks

1619 Rifle Range Road
Mt. Pleasant, SC 29464
(843) 884-9626
www.mountpleasantwaterworks.com

North Charleston Sewer District

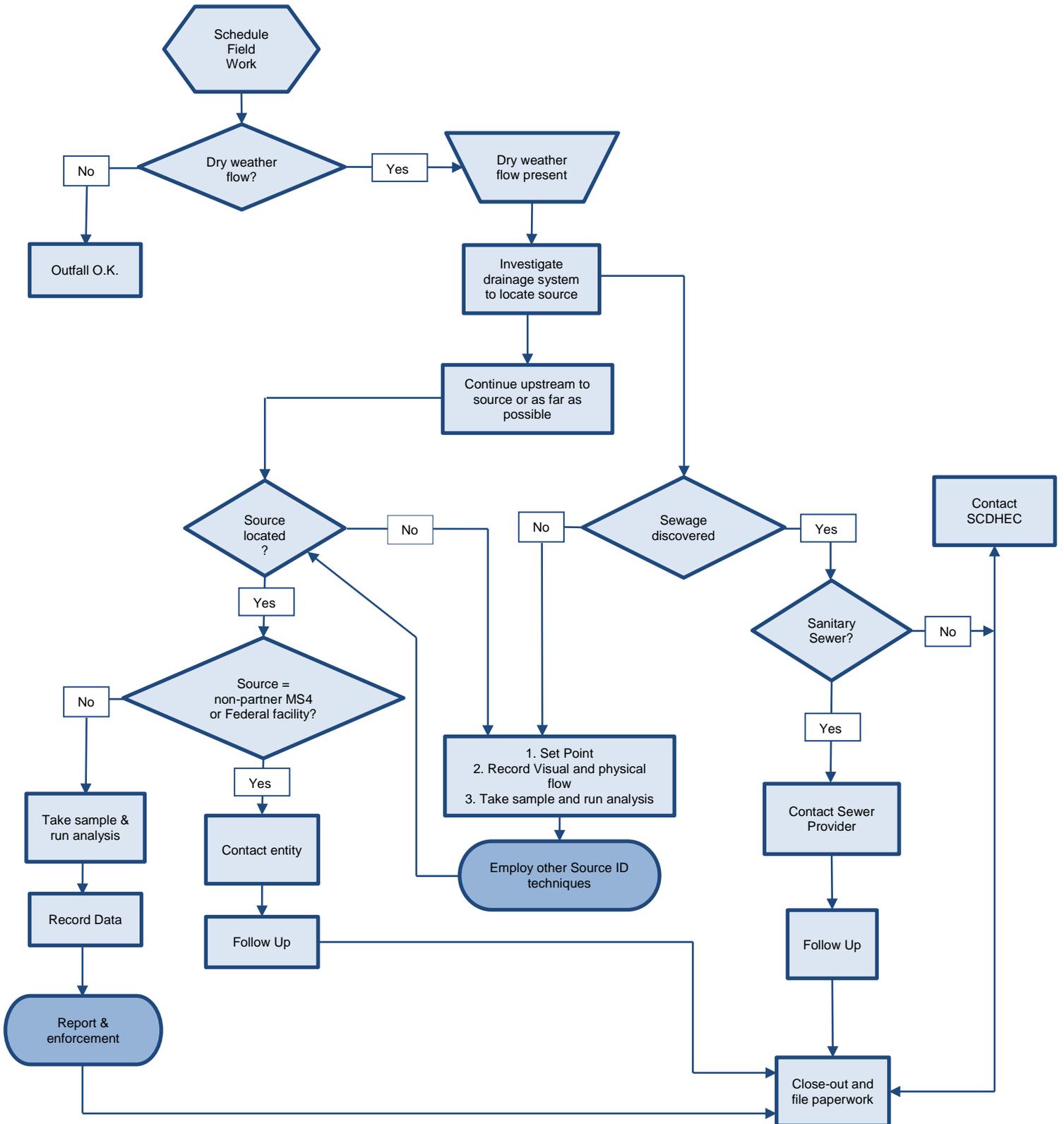
7225 Stall Rd.
North Charleston, SC 29406
(843) 764-3072
www.ncsd-sc.com

Moncks Corner Water Works

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

If the source is determined to be a septic system, the County Engineering Department shall contact SCDHEC as soon as possible after the identification of the illicit discharge source. See Section 2.3 for contact information.

Figure 4.1 – Illicit Discharge Source Identification Flowchart



4.2 Illicit Discharge Detection

Once a potential illicit discharge has been traced to the source or where no further visual evidence can be collected, field personnel 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 less than 0.10 inches of rain has fallen in the last 72 hours and locations are inspected to the MEP during low to mid-incoming or mid-ebbing tides if the location is tidally influenced.
3. At the source of the illicit discharge or the most upstream stormwater infrastructure asset with dry weather flow, record visual inspection information and take a grab sample using a clean sample bottle and complete chemical field investigation to verify the source of the illicit discharge. If the discharge is suspected to be sewage, an additional bacterial sample shall be collected. Procedures for collecting the sample are provided in Appendix B.
4. Perform the analysis of the sample taken for pH, water temperature, Total Chlorine, Total Copper, Total Phenols, Surfactants/Detergents, and bacteria (if applicable). Procedures for collecting the sample are provided in Appendix B. Record all analysis results in GIS using the Data Dictionary.
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. Record sampling results in the County GIS system.
7. If the set limits were observed for any one parameter, then the flow is considered illicit. Identify the property owner from tax maps. Begin enforcement procedures (see Section 2.3).

4.3 Additional Illicit Discharge Tracing Efforts

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

4.4 Reporting and Enforcement

Reporting and enforcement are the final steps to removing illicit discharges. Once a discharge is known to be an illicit discharge and the source has been positively identified or the discharge was tracked as far as possible, the appropriate system owners should be notified to address the source of the illicit discharge. Procedures are split amongst the

receiving system owner(s) of the potential or determined illicit discharge as outlined in Figure 4.2 below. Template notification letters are provided in Appendix F.

If the source is within the Berkeley County MS4 Area

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

1. Determine the owner(s) contact information and generate corrective action letter discussing County illicit discharge requirements.
2. Generate a report of sample analysis data (see Appendix C).
3. Submit letter and report to the owner(s).
4. Schedule a follow-up visit to the site approximately two weeks later to determine if the 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.
8. Record case status and investigation status in County GIS system.

If the source is within the Berkeley County Partner MS4 Area

At the time of publication of this manual, the County has an IGA with Hanahan and Goose Creek. In accordance with the stipulations outlined in the IGA, the County shall proceed with illicit discharge reporting and enforcement consistent with procedures elsewhere in the unincorporated portions of the County. As the County has agreed to perform compliance activities for the partner MS4 to meet NPDES permit requirements, the enforcement of illicit discharge elimination does not vary between the County and partners of the IGA.

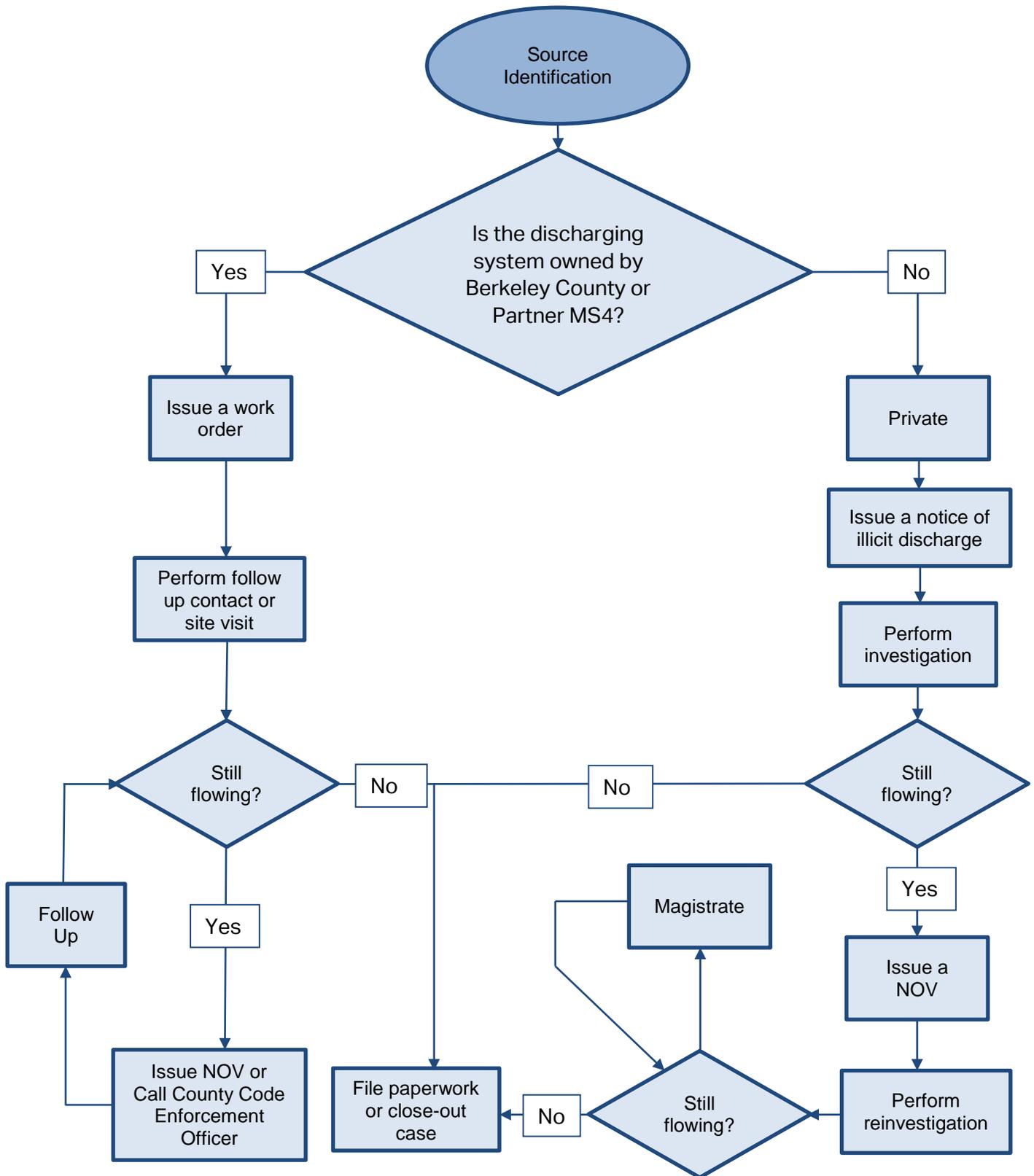
If the source is an MS4 or Federal Facility outside of the Berkeley County or Partner MS4 Areas

Enforcement procedures for illicit discharges determined to come from other entities will consist of notification and follow-up investigation and inspections. These are as follows:

1. Determine the owner(s) name and address and generate a corrective action letter discussing County or Partner MS4 illicit discharge requirements.
2. Generate a report of sample analysis data (see Appendices B and C).

3. Submit report to MS4 or Federal Facility. See Section 2.3 for contact information.
4. Schedule a follow-up phone call and/or site visit approximately two weeks later to determine if the illicit discharge has been removed.
5. Continue step 4 until the illicit discharge is resolved.
6. Once the illicit discharge has been removed, file paperwork and close case.

Figure 4.2 – Flowchart of Reporting and Enforcement



Appendix A – Field Sampling and Observation Parameters

Overview of Field Observations

Dry weather outfall screening and subsequent illicit discharge tracing, is a combination of physical and chemical analysis to accurately determine whether a dry weather flow is an illicit discharge and potential source identification. The following sections outline both physical and chemical parameters that should be tested for during dry weather field screening activities.

The parameters in this Appendix coincide with the Data Dictionary in Appendix C and as defined in the *Berkeley County Stormwater GIS/GPS Procedures Manual (GIS/GPS Manual)*, February 2018. The physical and chemical parameters should be collected and recorded as part of each dry weather field screening and illicit discharge detection event. The GIS database has been developed to accept multiple events for each outfall. Therefore, each inspection, tracing event, and subsequent illicit discharge elimination activity should be recorded in accordance with the procedures outlined in this Appendix and the GIS/GPS Manual. Consistent data collection and recording in GIS allows for a history and sampling log of each outfall.

Physical Parameters

Physical inspection during dry weather field screening is the first step in determining whether an illicit discharge may exist. Physical parameters include characteristics defined by sense of smell and visual observation. These parameters should always be evaluated, as many times illicit discharge sources can be identified by simple physical investigation of the outfall. The following physical parameters should be addressed during initial dry weather screening. They may also be important as part of illicit discharge source tracing activities depending on the type of discharge and composition of the storm drainage system. Appendix E includes a field inspection form for the physical parameters. This form is consistent with the Data Dictionary and is intended for use by the County staff when GPS data collection is unavailable. Where field inspection forms are used, the Engineering Department should conduct a follow-up inspection with GPS data collection to ensure that the GIS database accurately reflects all outfall inspections and identified potential illicit discharges.

Weather

Dry weather field screening must be preceded by at least 72 hours (3 days) with no measurable rainfall. Current weather conditions and the number of hours since the last measurable rainfall greater than 0.25 inches should be recorded during outfall screening and inspections. When adverse weather conditions prevent collection of samples during a scheduled sampling event, the sampling event must be rescheduled at the next available opportunity. Adverse weather conditions are those that are dangerous or create inaccessibility, such as local flooding, high winds, electrical storms, or situations that otherwise make sampling impractical, such as extended frozen conditions.

Tides

Where stormwater outfalls are located in tidally influenced areas, high tides may interfere with physical inspections and sampling for chemical analysis. Check the local tide tables prior to conducting field inspections to determine whether tides are rising or falling. The tide level observed in the field at the time of inspection (low, mid, high) should be recorded.

Flow

Any flow from an outfall during dry weather screening indicates that there may be an illicit discharge to the system. Illicit discharges with pollutants of concern are easily identifiable in dry weather flow samples owing to smaller flows. Dry weather flows should be characterized at the time of screening (e.g., trickle, low, significant, submerged). The rate of flow should be estimated by recording the time it takes to fill a container of a known volume. The flow volume can be estimated by using a container of known volume, and measuring the volume of flow captured in the container per unit time. The flow rate may be used to estimate pollutant loading based on sampling results.

Blockage

Improper disposal of non-stormwater discharges into stormwater inlets, channels and streams can cause inhibition or blockage of flow in the stormwater conveyance system. Field observations of conditions that cause blockages at outfalls should be noted for follow up maintenance by the County.

Odor

The odor of stormwater discharges can vary significantly based on tidal fluctuations, seasonal changes as well as potential sources of illicit discharges. Odor can be a good indicator of the type of pollutant in the water. 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.

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. Bacteria colonies may appear as a thin film with a prism 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.

Stains

Stains 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 and extent of the discoloration or stain within the conveyance system. Stains may also be apparent on soil, rocks or vegetation near the outfall.

Scum

The presence of scum can be an indicator of an illicit discharge and should be noted. Surface algal scum may be caused by nutrients or fertilizers from stormwater runoff. Scum with a strong sewer odor may indicate a sewage leak or overflow. Reddish-orange or filmy scum may be caused by high concentrations of iron bacteria. The presence of algae often indicates a continuous source of water flow. This may be from a pipe break, air conditioning condensate, etc.

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. Some discharges may damage plants or visibly stunt 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, and exposure to sun can 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.

Structure Condition

Like staining, the condition of the outfall structure can 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. The outfall condition is rated as: Excellent, Very Good, Good, Fair, Poor, Very Poor, or Needs Service.

Temperature

Water temperature that varies greatly from the ambient air temperature is a good indicator that there is an illicit discharge to the system. Temperature should be recorded as part of the sampling activities described in Appendix B.

Table A.1 provides examples of sources associated with physical sampling parameters.

Table A.1: Interpretations of Physical Observation Parameters and Potential Sources

Physical Parameter	Description
Odor—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, and stale sanitary wastewater)
Oil and gas:	Facilities associated with vehicle maintenance and operation or petroleum product storage
Rancid-sour:	Food preparation facilities (e.g. restaurants, hotels, etc.)
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.	
Yellow:	Chemical, textile, and tanning plants
Brown:	Meat packers, printing plants, metal works, stone and concrete works, fertilizer application, and petroleum storage facilities or facilities associated with vehicle maintenance
Green:	Chemical plants, and textile facilities
Red:	Meat packers
Gray:	Dairies
Turbidity –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.	
Cloudy:	Sanitary wastewater, concrete or stone operations, fertilizer facilities, and automotive dealers
Opaque:	Food processors, lumber mills, metal operations, and pigment plants
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.	
Sediment:	Construction site erosion
Oily:	Petroleum storage facilities and vehicle maintenance facilities
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.	
Excessive growth:	Food product facilities
Inhibited growth:	High stormwater flows, beverage facilities, printing plants, metal product facilities, drug manufacturing, petroleum facilities, vehicle maintenance facilities and automobile dealers.

Physical Parameter	Description
Damage to Outfall Structures –Cracking, deterioration, and spalling of concrete or peeling of surface paint, occurring at an outfall can be caused by severely contaminated discharges, usually of industrial origin. Primary metal industries have a strong potential for causing outfall structural damage because their batch dumps are highly acidic.	
Concrete cracking:	Industrial flows
Concrete spalling:	Industrial flows
Peeling paint:	Industrial flows
Metal corrosion:	Industrial flows

This table was modified from Pitt *et al.*, 1993. *Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User's Guide*. EPA Office of Research and Development, EPA/600/R-92/238.

Outfall Classification

A preliminary assessment of illicit discharge potential should be performed for each outfall once the physical observations are complete. The following summary table provides descriptions of four (4) outfall designations, This assessment coupled with sampling for chemical parameters will aid in characterization of the discharge,

Designation	Description
Obvious Discharge	Outfalls where there is an illicit discharge that doesn't even require sample collection for confirmation.
Suspect Discharge	Flowing outfalls with high severity on one or more physical indicators.
Potential Discharge	Flowing or non-flowing outfalls with presence of two or more physical indicators.
Unlikely Discharge	Non-flowing outfalls with no physical indicators of an illicit discharge.

Source: 2004 Center for Watershed Protection *Illicit Discharge Detection and Elimination Guidance Manual*

Chemical Parameters

When visual observation is not definitive in determining whether a dry weather flow is truly an illicit discharge, chemical sampling can be an important method for determining both the presence of illicit discharges, as well as potential sources that can be crucial in source tracing and identification. Where screening of physical parameters indicate the potential presence of an illicit discharge, sampling for chemical parameters should be initiated within 72 hours of the identification of the potential illicit discharge. This section defines these parameters and the typical sampling ranges that would indicate a potential illicit discharge. Appendix B outlines actual field sampling procedures for these parameters.

pH

The South Carolina surface water quality standard for pH is a range from 6.0 to 8.5 (SC Reg. 61-68, Water Classifications & Standards). Values outside of this range are an indicator of an illicit discharge. Water with values less than 6.0 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 8.5 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.

pH Range	Comment	Possible Causes
<6.0	Acidic	Textile mills, pharmaceutical manufactures, metal fabricators and companies that produce resin, fertilizers, or pesticides
6.0 – 8.5	Normal	N/A
>8.5	Alkaline	Textiles mills, metal plating facilities, steel mills, producers of rubber and plastic, and wash water used to clean floors or industrial machinery

Total 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 residual. 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 discharge from a swimming pool or other potable water source.

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

Total Copper

Elevated levels of copper may indicate discharges from cooling, boiler, or industrial re-circulation systems. Copper sulfate is typically used as an algaecide in all of these systems.

Copper can also be an indicator of discharges from an automobile manufacturing or maintenance facility from brake pads and other auto parts.

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

Total Phenols

Phenols are defined as hydroxy derivatives of benzene and its condensed nuclei, and 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, since phenols may also be present in other waste streams. Phenols should be considered in relation to other parameters in determining the potential source.

Total Phenols Range (mg/L)	Comment	Possible Causes
>0.399	High	Industrial process water/Rinse water

Surfactants/Detergents

Typically, the presence of surfactants and detergents will indicate a connection to either an automobile wash facility or a laundry facility. They may also occur from power washing buildings or paved surfaces. 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 SCDHEC, normal ranges of surfactants/detergents are 0.0 to 5.0 mg/l.

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

Biological Parameters

Enterococci, *E. coli* and fecal coliform are the three species of indicator bacteria used by the State of South Carolina to monitor the safety of its surface waters. These bacteria normally live in the intestines of warm-blooded animals, including humans. Most are harmless; however, detection of enterococci, *E. coli* or fecal coliform bacteria in surface waters is an indicator of the presence of a sanitary sewer or septic system discharge to the storm drainage system. SC Reg. 61-68, Water Classifications & Standards, establishes limits for indicator bacteria for salt waters, freshwaters and shellfish waters. These limits are presented in the bacteria tables below as a reference for gauging normal concentrations of indicator bacteria for stormwater outfall screening.

Enterococci Bacteria

South Carolina's indicator bacteria for salt waters is enterococci. The stream limits for enterococci bacteria in Class SA tidal salt waters are 104 MPN/100 mL for a daily maximum and 35 MPN/100 mL as a 30-day average. The stream limits for enterococci bacteria in Class SB tidal salt waters are 501 MPN/100 mL for a daily maximum and 35 MPN/100 mL as a 30-day average.

Enterococci Bacteria (MPN/100 mL)	Comment	Possible Causes
<104	Normal	N/A
>104	High	Sanitary Sewer or Septic System

***E. coli* Bacteria**

South Carolina's indicator bacteria for freshwaters is *E. coli*. The stream limits for *E. coli* bacteria in freshwaters are 349 MPN/100 mL for a daily maximum and 126 MPN/100 mL as a 30-day average.

<i>E. coli</i> Bacteria (MPN/100 mL)	Comment	Possible Causes
<349	Normal	N/A
>349	High	Sanitary Sewer or Septic System

Fecal Coliform Bacteria

South Carolina's indicator bacteria for shellfish waters is fecal coliform. The stream limits for fecal coliform bacteria in shellfish waters are 43 MPN/100 mL for a daily maximum and 14 MPN/100 mL as a 30-day average.

Fecal Coliform Bacteria (MPN/100 mL)	Comment	Possible Causes
<43	Normal	N/A
>43	High	Sanitary Sewer or Septic System

Common Sources of Illicit Discharges

The following section describes the most common sources of illicit discharges. These are typically associated directly with cross connections of potable water or sanitary sewers with the storm drainage system, system leaks entering the storm drainage system, or sanitary sewer overflows.

Treated Potable Water (Chlorine)

A number of chemical indicators 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 harder groundwater and the potable water is from softer surface supplies.
- If the concentration of chlorine is high, then a 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).

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 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 such as 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 – Outfall Sampling Procedures

Overview of Dry Weather Screening/Sampling Procedures

Upon arriving at an outfall, a physical inspection is performed. (See Appendix E, Illicit Discharge Inspection Form.) First record the inspection date, inspector name, Asset ID and background information as applicable. Then note the time since last rain, tide level and impending tide, structural condition, percent blockage, presence of scum, and estimated discharge rate. If no evidence of illicit discharge is present, the inspection is complete. If evidence of potential illicit discharge is found, continue with the inspection: A description of the flow rate, color, odor, turbidity, floatables, and stain observations are recorded on site. Additionally, adjacent vegetation is observed and recorded. Make a preliminary assessment of the illicit discharge potential based on the physical observations. A full description of the type and quantity of the discharge and a photograph of the discharge should be included in the record.

If physical screening indicates the presence of a potential illicit discharge, a grab sample shall be collected from the discharge point within 72 hours of the initial physical investigation. Temperature and pH are measured in the field using a Hach Sension pH/Temperature meter or equivalent immediately after the grab sample is taken. The samples should then be tested for Total Chlorine, Total Copper, Total Phenols, and Surfactants/Detergents using a Hach DR 1900 mobile Spectrophotometer or equivalent mobile laboratory. Where physical screening indicates the presence of potential sewage flow, field personnel shall take a second field sample for laboratory analysis, in accordance with the procedures outlined below.

After observing and recording outfall screening observations and sampling, proceed upstream if necessary, tracking the discharge up through the conveyance system. Look for continuing evidence of illicit discharge. Additional sampling may be taken and recorded while tracking the discharge. A confirmatory sampling may be taken at the upstream location of the source. Once the source has been identified, notify the Berkeley County Stormwater Management Program to initiate communication with the property owner, or enforcement as needed.

Calibration

Prior to Starting Point Collection

Prior to calibrating equipment or collecting any samples, the manufacturer of the selected pH/Temperature meter and spectrophotometer should be consulted to provide technical support and directions for operating the required equipment. Proper decontamination procedures are also vital to quality analysis and should be followed as recommended by the manufacturer.

At the beginning of each week, a calibration of the Hach Sension pH/Temperature meter and the Hach DR 1900 Spectrophotometer (or equivalents) should be performed. The calibration for the pH/Temperature meter and Spectrophotometer should be completed in accordance with the manufacturer provided User Manual or other technical resources from the manufacturer.

Each day prior to entering the field, a pH calibration check should be performed using either the pH 4.00 or pH 10.00 QC standard. Let the pH reading stabilize and when a lock is achieved the meter should read the pH of the known QC standard. If the reading does not match the pH QC standard then recalibrate the pH meter in accordance with the manufacturer provided User Manual or other technical resources from the manufacturer.

Visual Observation

Safety is the first priority upon arriving at a site and when completing visual observations. A brief assessment of potential hazards should be completed to avoid unnecessary risk and ensure safety during dry weather screening and sampling. Communication between field personnel is vital and will lead to greater safety and more successful work.

Upon arriving at the outfall, a visual observation of the structure and structure flow is performed. The Data Dictionary outlines all of the visual parameters which will be recorded for each discharge point. A GPS unit will incorporate the Data Dictionary and will be used to record all visual observations and sampling data.

Record all parameters as prompted within the Data Dictionary. Visual parameters include: discharge rate, flow rate description, color, odor, turbidity, floatables, and stains. Additionally, the structure condition, percent blockage, and adjacent vegetation are observed and recorded. Other information, which appears in the Data Dictionary, including time since last rain and tide level are also recorded.

Grab Sample Collection

Upon completion of the visual observation, two (2) one-liter (1000 ml) grab samples are to be collected from the outfall if flow is present. A clean one-liter Nalgene bottle (sample bottle) is to be used for grab sample collection.

Prior to collecting the grab samples, the sample bottles should be rinsed 3 times with the stormwater flow from the discharge point. After properly rinsing, fill the sample bottle from the horizontal and vertical center of the stormwater stream, being careful not to pick up sediment from the bottom.

Sampling Procedures

After collecting the grab sample, the first bottle should be used to collect field parameters. The parameters to be collected in the field include:

- Temperature
- pH
- Total Chlorine
- Total Copper
- Total Phenols
- Surfactants/Detergents

Temperature and pH should immediately be taken in the field using a Hach Sension pH/Temperature meter or equivalent. The samples should then be tested for Total Chlorine, Total Copper, Total Phenols, and Surfactants/Detergents using a Hach DR 1900 Spectrophotometer or equivalent in a mobile laboratory. These procedures are outlined below.

The second sample bottle should be stored in a cooler for laboratory analysis. See **Bacteria Sampling Procedures** below for proper storage and sampling techniques for bacterial analysis.

Sampling Parameters

pH and Temperature

Using the pH/Temperature meter, pH and Temperature should immediately be taken after collecting the grab sample. Prior to collecting pH and Temperature, rinse the probe with DI water and dry gently by blotting with a tissue. The pH and Temperature parameters should be analyzed in accordance with the manufacturer's User Manual or other technical resources from the manufacturer. Record all analysis results in GIS using the Data Dictionary, or record the results on the Illicit Discharge Inspection Form in Appendix E and update the GIS data in the office.

Total Chlorine

Using the Spectrophotometer, Total Chlorine should be analyzed next. The Total Chlorine parameter should be analyzed in accordance with the manufacturer's User Manual or other technical resources from the manufacturer. Record all analysis results in GIS using the Data Dictionary. Total Chlorine results greater than 5.0 mg/L are considered high and may be caused by swimming pools or potable water sources.

Total Copper

Using the Spectrophotometer, Total Copper should be analyzed next. The Total Copper parameter should be analyzed in accordance with the manufacturer's User Manual or other technical resources from the manufacturer. Record all analysis results in GIS using the Data Dictionary. Total Copper results greater than 0.5 mg/L are considered high and may be caused by manufacturing or industrial discharges.

Total Phenols

Using the Spectrophotometer, Total Phenols should be analyzed next. The Total Phenols parameter should be analyzed in accordance with the manufacturer's User Manual or other technical resources from the manufacturer. Record all analysis results in GIS using the Data Dictionary. Total Phenol results greater than 0.399 mg/L are considered high and may be caused by industrial process water or rinse water.

Surfactants/Detergents

Using the Spectrophotometer, Surfactants/Detergents should be analyzed next. The Surfactants/Detergents parameter should be analyzed in accordance with the manufacturer's User Manual or other technical resources from the manufacturer. Record all analysis results in GIS using the Data Dictionary.

End of Day

At the end of each work day, complete a pH/Temperature meter check by running a pH test with the pH 10.00 QC standard. Make sure all equipment has been cleaned (glassware with non-phosphate detergent) and set out to dry. Charge the batteries for all equipment. Make any required preparations for the next day sampling.

Bacteria Sampling Procedures

The sampling outlined below is designed to enable the County to sample for bacteria as a potential pollutant of concern with respect to illicit discharges in the Coastal Zone of South Carolina. Enterococci, *E. coli* and fecal coliform are indicator bacteria and, if present in a dry weather field screening sample, can indicate the presence of an illicit discharge from septic systems or sanitary sewers. The following outlines sampling procedures, safe storage and chain of custody requirements to provide usable sampling results to the County. The bacteria parameter should be selected based on the South Carolina Water Quality Standards for the receiving water. Enterococci should be chosen for saltwater; *E. coli* for freshwaters; and fecal coliform for shellfish waters.

As previously stated, upon completion of the visual observation, two (2) one-liter (1000 ml) grab samples are to be collected from the discharge point if flow is present. A clean one-liter Nalgene bottle (sample bottle) is to be used for grab sample collection. One of the one-liter samples should be stored for laboratory analysis. The following requirements and procedures must be in place to ensure accurate sampling results:

The samples will be collected by manual "grab" sampling as follows:

- Container Preparation and Labeling
 - Reused Sample Bottles: Prepare one-liter sample bottles. Reused sample bottles must be rinsed and sterilized at 121°C for 15 minutes using an autoclave before sampling. Sample bottles should have tape over the cap or a marking to indicate that they have been sterilized. Sample bottles shall be clearly marked.
 - Sample bottles/bags shall be clearly labeled with the following information:
 - Outfall location (e.g., address, nearest street or subdivision) and unique identifier from GIS

- Sample date
 - Sample time
 - Sampling team member's initials
- Direct Sampling Surface Water
 - Remove stopper/cap from bottle just before sampling. Be careful not to contaminate the cap, neck, or the inside of the bottle with your fingers, wind-blown particles, or dripping water from your clothes, body, or overhanging structures.
 - Place yourself facing the outfall flow.
 - Hold the bottle near its base, reach out in front of yourself as far as possible, and plunge it (mouth down) below the surface to a depth of 6 inches or more if the sediments will not be disturbed.
 - Keep the bottle submerged long enough for the bottle to fill.

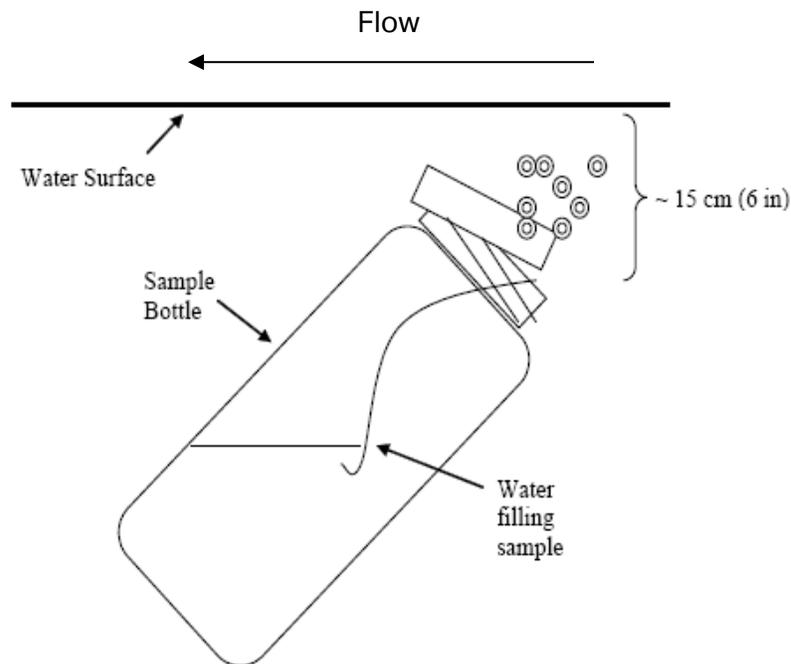


Figure A-1: Sample Collection

- If an extension pole is used from a bridge or streambank, securely attach the sample bottle (with its cap in place) to the holder with the clamps or bands. Remove the cap being careful not to contaminate the bottle and follow the above procedure.
- Tip out some of the water to allow for air space needed for proper mixing at the lab. Securely replace the cap of the bottle being careful not to touch the inside of the cap.
- Rinse any large amount of dirt or debris from the outside of the bottle after securing the cap.
- Sample Storage
 - After collecting the sample, immediately review the sample tag to ensure accurate location and analytical information. Record the time the sample was collected on the tag and enter relevant data into the Field Data Sheet/Chain of Custody using waterproof ink.
 - Immediately place labeled sample bottle on ice in a cooler with a tight-fitting lid. Use only enough ice to maintain the required preservation temperature of 6 °C or less (and not frozen).
- Field Data Sheet/Chain of Custody Form (Appendix B below)
 - Sampling Information. Complete the field data for each sample collected.
 - Immediately following sample collection, complete the Chain of Custody for the samples collected from each monitoring station.
 - Upon delivery to the Lab, sign the Field Data Sheet/Chain of Custody Form to relinquish the samples to the Lab.
- Sample Delivery
 - Return the Field Data Sheet/Chain of Custody Form and the samples to the Laboratory or to a previously designated drop-off point as soon as possible. Samples must be analyzed within 8 hours of collection.
 - Samples must be analyzed at a laboratory certified by SCDHEC for the analysis of enterococci, *E. coli* or fecal coliform.

**BERKELEY COUNTY DRY WEATHER SCREENING SAMPLING
FIELD DATA SHEET/CHAIN OF CUSTODY**

Form must be filled out and a copy retained at the County Engineering Department as part of the monitoring record. Fill out the following table completely.

Sampling Event No.: _____ Date of Sample Set: _____ Hours after Measured Rainfall Event (Greater than 0.1 inches): _____ (Must be a Min. 72 hours)	Outfall ID					
Time of Sample						
One-liter sampling bottle	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
Bottles labeled with date and time	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
Bottles labeled with sample location	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
Samples put on ice after collection	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
Sample temperature / Blank temperature at collection	___/___°C	___/___°C	___/___°C	___/___°C	___/___°C	___/___°C
Temperature upon receipt at Lab	___°C	___°C	___°C	___°C	___°C	___°C

Comments/General Field observations: _____

Field Monitor Name: _____ Field Monitor Signature: _____ Date: _____

**BERKELEY COUNTY DRY WEATHER SCREENING SAMPLING
FIELD DATA SHEET/CHAIN OF CUSTODY**

Chain of Custody No.:				Project Point of Contact:									
Destination Lab:				Phone Number:									
Date	Time	Relinquished by			Date	Time	Received by						
Date	Time	Relinquished by			Date	Time	Received by						
Date	Time	Relinquished by			Date	Time	Received by						
Sample ID	No. Bottles	PARAMETERS	Bacteria			Chemical						COMMENTS	
			Enterococci	E. Coli	Fecal Coliform	Total Chlorine	Total Copper	Total Phenol	Surfactant				

Appendix C – Data Dictionary

Introduction

The following tables represent the data dictionary for field collection parameters that complies with the GIS/GPS data structure for Berkeley County as defined in the *Berkeley County Stormwater GIS/GPS Procedures Manual (GIS/GPS Manual)*, February 2018. This data dictionary is provided in this Appendix as a reference for field personnel completing outfall and illicit discharge data. Additional data collection parameters for stormwater infrastructure can be found in the GIS/GPS Manual.

Outfall Screening Summary

FEATURE CLASS	NOTES	TYPE
swDischargePoint	Subset is Outfalls.	Point
IDDETrack	Downstream location of potential illicit discharge.	Point
Illicit DischargeSource	Location of upstream source of illicit discharge.	Point
TABLE	NOTES	
NPDESScreen	Outfall screening visual observations and sampling results. Linked to swDischargePoint feature class.	--

swDischargePoint (DISCHARGE POINTS)

FIELD NAME	FIELD DESCRIPTION	ADDITIONAL NOTES
ASSETID	ASSETID – unique identifier code	To be used within GIS as the primary linkage field.
GISOBJID	EAM ID - Enterprise Asset Management Servicer	Unique identifier for enterprise asset management system.
LegacyID	Legacy ID – former AssetIDs in County's database	Use in processing former data and tracking changes.
GlobalID	Global Identifier code	Primary identifier never changes.
DISCHID	Discharge Identifier	Assign as needed.
PERMITID	Unique permit identifier	County populate as needed.
INSTALLDATE	The date the asset was installed or constructed	Populate if known.
LOCDESC	Location Description	Street Address, HOA, Subdivision, or description of location of discharge point on the parcel.
DISCHRGTYP	The type of stormwater discharge - tied to swDischargePointType domain	Options are: Pipe, Culvert, Channel, Spillway, or Bridge. Bridge outfalls are identified using aerial image.
OUTFALL	OUTFALL - tied to BooleanDomain domain	Yes/No if discharge point is an MS4 outfall. May be determined in office using last feature at the downstream end of a drainage line. Upstream discharge points are not outfalls.
MAINSHAPE	Main Shape - tied to swPipeShape domain	Shape of asset where discharge point is located.
SHAPECONFIG	Channel cross-sectional shape – tied to swChannelShape domain	Identify as Trapezoidal, Rectangular, Parabolic/U-shaped, Triangular/V-shaped or Valley Gutter Roadway
MATERIAL	Material the asset is manufactured with - tied to swPipeMaterial domain	Identify the material at point of discharge.
LiningType	Material Bottom/Protection – tied to swBMPmat domain	Identify material lining of discharge point.
STRUCT_TYP	STRUCT_TYP – end structure of asset at discharge point – tied to swStructTYP domain	If more than one, note in Comments.
DIAMETER	The diameter of the asset - tied to swPipeDiameter domain	Diameter of asset, if circular, where discharge point is located.
WIDTH	WIDTH – of asset	Dimension of asset, if rectangular, where discharge point is located.
WIDTHBOT	Bottom Width – of asset	Dimension of asset, if rectangular, where discharge point is located.
HEIGHT	HEIGHT – of asset	Dimension of asset, if rectangular, where discharge point is located.

FIELD NAME	FIELD DESCRIPTION	ADDITIONAL NOTES
INVERTDEPTH	Invert Depth – of discharge point	Depth to invert at point of discharge.
INVERTELEV	Invert Elevation – of discharge point	Elevation at point of discharge.
BridgeWidth	Width of Bridge – if bridge is also an outfall	Populate if discharge sheet flows from bridge into receiving water. Inlets/scuppers are mapped in the Inlets feature class.
BridgeLength	Length of Bridge – if bridge is also an outfall	Populate if discharge sheet flows from bridge into receiving water. Inlets/scuppers are mapped in the Inlets feature class.
DischargeLoc	The location of the discharge point – tied to swOutletLocation domain	Legacy field/data.
BMP	BMP - tied to the YesNo domain	Yes if discharge point is from BMP directly to waters.
STENCIL	Storm Drain Stencil – tied to YesNo domain	Identify points marked (with paint, sticker, sign or plate) "No Dumping - Drains to River" or similar
COMMENTS	Narrative field – describe unique circumstances in feature or attributes only.	Separate comments with # sign.
ACTIVEFLAG	Indicates if the feature is in use/active - tied to BooleanDomain domain	If as-built feature cannot be located in field, keep in database but mark ActiveFlag as "No".
LIFECYCLESTATUS	Indicates status/use of feature – tied to LifeCycleStatus domain.	Identify active, abandoned, under construction, etc.
AncillaryRole	Ancillary Role – tied to AncillaryRoleDomain domain	Options are: source, sink, none.
NeedsMaintenance	For use in field data collection – tied to swMaint domain	Document maintenance issues observed in the field.
Accessible	For use in field data collection – tied to swAccessibility domain	Document access difficulties observed in the field.
OWNEDBY	Owned by - Indicates which organization owns the asset - tied to swAgency domain	Identify Berkeley County, Goose Creek, Hanahan, etc.; update with annexation.
MAINTBY	Indicates which organization maintains the asset - tied to swAgency domain	Identify Berkeley County, Goose Creek, Hanahan, private, etc.; may be determined by maintenance agreement.
LASTUPDATE	The date the feature was last updated in the database	Date of most recent edits
LASTEDITOR	The user who performed the last update	Name of analyst
SOURCE	SOURCE - tied to uSource domain	As-built, GPS, aerial image, etc.
SOURCEACC	SOURCEACC - tied to uSourceAccuracy domain	Accuracy of GPS equipment

FIELD NAME	FIELD DESCRIPTION	ADDITIONAL NOTES
SOURCEDATE	SOURCEDATE – date of source data used to create GIS	Date of as-built, GPS survey, aerial image, etc.
SOURCEDATUM	SOURCEDATUM – tied to uSourceDatum domain	Datum used in as-built, survey, etc.
HUC12	Hydrologic Unit Code - from USGS	Identify the 12-digit hydrologic unit code for the subwatershed in which the discharge point is located.
RECSTREAM	Receiving Stream – receives discharge from feature	Identify the body of water directly downstream of the discharge point.
WatshedName	Watershed Name – assigned by Berkeley County	Identify the watershed in which the discharge point is located.
PHOTO_FILENAME	Photo filename and photo number	May use uattachment domain options (area, internal, issue, etc.) in filename.
PHOTO_PATH	Directory location where photo file is stored	Files are stored on a server separate from the GIS database.
PHOTO_RELPATH	Relative directory location where photo file is stored	// allows gdb to find the photo if server is mapped under a different letter.
DimUOMElev	Unit of Measure for Elevation – tied to uDimUOMElev domain	Elevations
DimUOMLength	Unit of Measure for Length Dimension – tied to uDimUOMLin domain	Linear dimension
DimUOMWidth	Unit of Measure for Width Dimension – tied to uDimUOMLin domain	Linear dimension
DimUOMDepth	Unit of Measure for Depth Dimension – tied to uDimUOMLin domain	Linear dimension
DimUOMHeight	Unit of Measure for Height Dimension – tied to uDimUOMLin domain	Linear dimension
DimUOMDiameter	Unit of Measure for Diameter Dimension – tied to uDimUOMLin domain	Linear dimension
XCORD	X-Coordinate from GPS	Calculate using survey grade GPS point
YCORD	Y-Coordinate from GPS	Calculate using survey grade GPS point
ZCORD	Z-Coordinate from GPS	Calculate using survey grade GPS point
ROTATION	ROTATION – of symbol	Use for symbology as needed.
ENABLED	Geometric Network - tied to EnabledDomain domain	True indicates geometric network has been built and feature can be traced.
GRID	Map Grid number where the feature is located	Custom grid for Berkeley County

Discharge Point Notes

- Discharge Point Type domain: Pipe, Channel, Culvert, Bridge, Overflow Spillway, Other.
- This feature class is intended to only store information specific to the point of discharge, with minimal attributes. The underlying asset where the discharge point is located should be mapped in the appropriate feature class (pipe, culvert, channel, etc.)
- This feature class has legacy data which cannot be migrated to the appropriate underlying feature class because the data was collected as points rather than lines. These attributes should be made un-editable for the future in order to ensure new data collection occurs in the correct feature class.
- New outfalls will be extracted from the ends of the flow network and copied to this feature class.
- Other NPDES-related data is stored in the NPDESSCREEN table and linked by AssetID.

IDDETrack

Field Name	Field Description	Additional Notes
ASSETID	ASSETID – unique identifier code	To be used within GIS as the primary linkage field.
GISOBJID	EAM ID - Enterprise Asset Management Servicer	Unique identifier for enterprise asset management system.
INVENTORY_DATE	The date of outfall screening for illicit discharge	Field observations date. Should match NPDESScreen table Inspection Date.
REPORTED	Investigation trigger - tied to <i>npdesReportHow</i> domain.	Report may be verbal or written, from citizens or County personnel, or result from routine outfall screening.
REPORT_DESC	Description of the reported illicit discharge at downstream location	Complaint or observations of potential illicit discharge
REASON_TRACKED	Reason for inspection – tied to <i>npdesReason</i> domain.	Reasons could be Random Selection of Outfalls, Citizen Complaint, Re-Inspection of previous illicit discharge
INVEST_STATUS	Status of investigation for illicit discharge - tied to <i>npdesInvest</i> domain.	Enter status of investigation. Note details in Comments field.
CASESTATUS	Illicit Discharge tracking status – tied to <i>npdesIDDE_Status</i> domain.	Identify as Active or Closed
COMMENTS	Narrative field - unique circumstances in feature or attributes only.	Separate comments with # sign.
INSPECTOR	Name of person conducting outfall screening	First and last name.
HUC12	Hydrologic Unit Code - from USGS	Identify the 12-digit hydrologic unit code for the subwatershed in which the illicit discharge outfall is located.
WATERSHED_NAME	Watershed Name – assigned by Berkeley County	Identify the watershed in which the illicit discharge outfall is located.
PHOTO_FILENAME	Photo filename and photo number	May use <i>uattachment</i> domain options (area, internal, issue, etc.) in filename
PHOTO_PATH	Directory location where photo file is stored	Files are stored on a server separate from the GIS database.
PHOTO_RELPATH	Relative directory location where photo file is stored	// allows gdb to find the photo if server is mapped under a different letter.
XCORD	X-Coordinate from GPS	Calculate using survey grade GPS point
YCORD	Y-Coordinate from GPS	Calculate using survey grade GPS point
ZCORD	Z-Coordinate from GPS	Calculate using survey grade GPS point
GRID	Map Grid number where the feature is located	Custom grid for Berkeley County

IDDE Track Notes

- This feature class stores the downstream location of potential illicit discharges.
- One to Many relationship with this feature class allows each outfall screening event to create a new record, all tied back to the AssetID.

IllicitDischargeSource

Field Name	Field Description	Additional Notes
ASSETID	ASSETID – unique identifier code	To be used within GIS as the primary linkage field.
GISOBJID	EAM ID - Enterprise Asset Management Servicer	Unique identifier for enterprise asset management system.
INSPECTOR	Name of person conducting outfall screening	First and last name. Should match inspector name in IDDETrack of downstream location.
INVENTORY_DATE	The date of illicit discharge tracking to upstream source.	Field observations date. Should match NPDESScreen table Inspection Date and IDDETrack Inspection Date. If dates do not match, note reason in Comments field.
ILLICIT_DESC	Description of identified source of discharge – tied to <i>npdesIllicitDesc</i> domain.	Options are: Obvious Discharge, Suspect Discharge, Potential Discharge, Unlikely Discharge
SOURCE	Upstream source of the illicit discharge – tied to <i>npdesIllicitSource</i> domain.	Identify source of pollutants. Options are: industrial facility, construction site, auto body repair/gas station, car wash, outdoor materials/wastes storage, restaurant/grease trap, sanitary sewer overflow, illicit sanitary sewer connection, residential area, septic tank, illegal dumping or Unknown.
CASESTATUS	Illicit Discharge tracking status – tied to <i>npdesIDDE_Status</i> domain	Identify as Active or Closed
OWNER	Owner of parcel where upstream source is located.	Use County tax/property owner records.
TAXMAP	Parcel number where upstream source is located.	Use County tax/property owner records.
ADDRESS_NO	Street number where upstream source is located.	Use County tax/property owner records.
ADDRESS_ST_PREFIX	Street prefix where upstream source is located.	Use County tax/property owner records.
ADDRESS_NAME	Street name where upstream source is located.	Use County tax/property owner records.
ADDRESS_SUFFIX	Street suffix where upstream source is located.	Use County tax/property owner records.
CITY	City where upstream source is located.	Use County tax/property owner records.
STATE	State where upstream source is located.	Use County tax/property owner records.
ZIPCODE	Zip code where upstream source is located.	Use County tax/property owner records.

Field Name	Field Description	Additional Notes
COMMENTS	Narrative field - unique circumstances in feature or attributes only.	Note relevant details of source, or if source is determined to be an authorized nonstormwater discharge (i.e., air conditioner condensate, landscape sprinklers, etc.)
HUC12	Hydrologic Unit Code - from USGS	Identify the 12-digit hydrologic unit code for the subwatershed in which the illicit source is located.
WATERSHED_NAME	Watershed Name – assigned by Berkeley County	Identify the watershed in which the illicit discharge source is located.
PHOTO_FILENAME	Photo filename and photo number	May use uattachment domain options (area, internal, issue, etc.) in filename
PHOTO_PATH	Directory location where photo file is stored	Files are stored on a server separate from the GIS database.
PHOTO_RELPATH	Relative directory location where photo file is stored	// allows gdb to find the photo if server is mapped under a different letter.
XCORD	X-Coordinate from GPS	Calculate using survey grade GPS point
YCORD	Y-Coordinate from GPS	Calculate using survey grade GPS point
ZCORD	Z-Coordinate from GPS	Calculate using survey grade GPS point
GRID	Map Grid number where the feature is located	Custom grid for Berkeley County

Illicit Discharge Source Notes

- This feature class stores the upstream location of illicit discharges which have been tracked to their source.
- One to Many relationship with this feature class allows each outfall screening event to create a new record, all tied back to the AssetID.

NPDESScreen - Table

Field Name	Field Description	Additional Notes
ASSETID	ASSETID – unique identifier code	To be used within GIS as the primary linkage field.
GISOBJID	EAM ID - Enterprise Asset Management Servicer	Unique identifier for enterprise asset management system.
LEGACYID	Legacy ID – former AssetIDs in County’s database	Use in processing former data and tracking changes.
GlobalID	Global Identifier code	Primary identifier never changes.
NPDESID	NPDES Permit Number	NPDES Permit number of MS4 (Berkeley County, Hanahan, Goose Creek) where outfall is located, or other NPDES permitted outfall.
Inspector	Name of person conducting outfall screening	First and last name.
INSPECDATE	Date of NPDES outfall screening	Inspection date should match with IDDETrack feature class Inventory Date.
WEATHER	Weather conditions at time of screening	Use local weather report.
LASTRAIN	Last rainfall event prior to screening - tied to <i>npdesLastRain</i> domain	Identify: less than 24 hrs, 24 to 48 hrs, 48 to 72 hrs, greater than 72 hrs. Use local weather report and rainfall data.
TIDELEVEL	Tide at time of screening - tied to <i>npdesTideLevel</i> domain	Check local tide table: low tide, mid tide or high tide.
IMPENDING_TIDE	Tide at time of screening – tied to <i>npdesImpendingTide</i> domain.	Check local tide table. Indicate Rising or Falling tide.
FLOW	Flow rate of discharge - tied to <i>npdesFlow</i> domain	Options are: dry, trickle, low steady flow, significant flow, or submerged. If dry, populate stains, scum, odor and/or vegetation.
DischargeR	Estimated flow rate at outfall at time of sample collection.	Visual estimate based on pipe diameter.
EvidIllicit	Evidence of illicit discharge - tied to <i>YesNo</i> domain	If yes, populate observation and sampling fields. If no, populate Date, Inspector, Weather, LastRain, TideLevel and Condition.
COLOR	Color of discharge - tied to <i>npdesColor</i> domain	Options are: clear, slightly tinted, rust, intense, black, white, oily. Note identifying details in Comments field.
ODOR	Odor of discharge - tied to <i>npdesOdor</i> domain	Options are: none, sewage, chlorine, petroleum, chemical, sulfide, rancid/sour.
TURBIDI	Discharge turbidity - tied to <i>npdesTurb</i> domain	Options are: clear, slight cloudiness, cloudy.

Field Name	Field Description	Additional Notes
FLOATAB	Discharge floatables - tied to npdesFloatable domain	Identify: foam, sewage, petroleum, film, none.
STAINS	Stains or residue from the discharge left on the conveyance system - tied to npdesStains domain	Options are: powder, rust, petroleum, none.
Scum	Scum in discharge or on asset - tied to YesNo domain	Yes if scum line is visible on structure or vegetation.
VEGETATION	Vegetation growth in the immediate discharge area - tied to npdesVeg domain	Identify: normal, slight or excessive vegetation.
CONDITION	Structural or overall condition of the asset - tied to Condition domain	Blockage/obstruction of asset stored in separate attribute.
BlckPrcntg	Percent blockage at outfall – tied to npdesBlockPercent domain	Estimate blockage of cross-sectional area of flow in increments of 25%.
BlckType	Type of blockage	State what object or material is blocking the discharge point.
BlckRsn	Reason for blockage – tied to npdesBlockReason domain	Reasons may be structural (collapse), temporary (parked vehicle) or other.
NumSmpl	Sample number – tied to npdesNumSmpl domain	Options are: First Sample, Second Sample, No Sample-Assessment Only, Illicit Tracking/Sampling.
pH	pH of sample at time of collection	Use probe.
Temp	Temperature of sample at time of collection (°C).	Use probe.
Chlorine	Total Chlorine concentration of sample at time of collection (mg/L).	Use mobile sampler.
Copper	Total Copper concentration of sample at time of collection (mg/L).	Use mobile sampler.
Phenol	Total Phenol concentration of sample at time of collection (mg/L).	Use mobile sampler.
Surfact	Surfactant concentration of sample at time of collection (mg/L).	Use mobile sampler.
Enterococcus	Concentration of Enterococcus indicator bacteria for saltwaters (MPN/100mL).	Collect grab sample and send to lab.
E. Coli	Concentration of E. Coli indicator bacteria for freshwaters (MPN/100mL).	Collect grab sample and send to lab.
Fecal Coliform	Concentration of Fecal Coliform indicator bacteria for shellfish harvesting (MPN/100mL).	Collect grab sample and send to lab.

NPDES Screen Notes

- This table stores the outfall screening visual observations, measurements and sampling results performed at locations of potential illicit discharges.
- Downstream location of illicit discharge is stored in IDDETRACK feature class.
- Upstream location of pollutant source of illicit discharge is stored in IllicitDischargeSource feature class.
- One to Many relationship with this feature class allows each outfall screening event to create a new record, all tied back to the AssetID.

Outfall Screening Domains

<p><u>npdesColor</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Clear • Slightly Tinted • Rust • Intense • Black • White • Oily • Other (See Comment) 	<p><u>npdesOdor</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • None • Sewage • Chlorine • Petroleum • Chemical • Other (See Comment) • Sulfide • Rancid/Sour
<p><u>npdesTurb</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Clear • Cloudy • Slight Cloudiness • Other (See Comment) 	<p><u>npdesFloatable</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • None • Foam • Petroleum • Sewage • Film • Other (See Comment)
<p><u>npdesFlow</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Dry • Trickle • Low Steady Flow • Significant Flow • Submerged 	<p><u>npdesLastRain</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Greater than 72hrs • 48 to 72 hrs • 24 to 48 hrs • Less than 24 hrs
<p><u>npdesTideLevel</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Low tide at time of inspection • Mid tide at time of inspection • High tide at time of inspection 	<p><u>npdesImpendingTide</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Rising • Falling
<p><u>npdesStains</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • None • Powder • Rust • Petroleum • Other (See Comment) 	<p><u>npdesVeg</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Normal • Slight • Excessive • Other

<p style="text-align: center;"><u>npdesBlockReason</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Permanent (structural) • Temporary • Other 	<p style="text-align: center;"><u>npdesBlockPercent</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Less than 25 percent • 25 to 50 percent • 50 to 75 percent • More than 75 percent
<p style="text-align: center;"><u>npdesReportHow</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Complaint Call/Report • Outfall Screening • Other-Describe in Comments 	<p style="text-align: center;"><u>npdesReason</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Random Selection of Outfalls • Citizen Complaint • Re-Inspection of previous illicit discharge
<p style="text-align: center;"><u>npdesIllInvest</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • No Illicit • Possible Illicit-Investigation Needed • Possible Illicit-On-Going investigation • Possible Illicit-Return for Additional Sampling • Illicit-Source Found • Illicit-Enforcement in Progress • Illicit-Investigation Closed 	<p style="text-align: center;"><u>npdesIllicitDesc</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Obvious Discharge • Suspect Discharge • Potential Discharge • Unlikely Discharge
<p style="text-align: center;"><u>npdesNumSmpl</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • First Sample • Second Sample • No Sample-Assessment Only • Illicit Tracking/Sampling 	<p style="text-align: center;"><u>npdesIDDE Status</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Active • Closed
<p style="text-align: center;"><u>npdesIllicitSource</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Industrial facility • Construction site • Auto body repair/gas station • Car wash • Outdoor materials/wastes storage • Restaurant/grease trap • Residential area • Sanitary sewer overflow • Septic tank • Illicit San Sewer Connection • Illegal dumping • Unknown 	<p style="text-align: center;"><u>Condition</u> (DISCHARGE POINTS)</p> <ul style="list-style-type: none"> • Excellent • Very Good • Good • Fair • Poor • Very Poor • Unknown • Needs Service

Appendix D – Desktop Outfall Assessment Procedures

PRELIMINARY DESKTOP ASSESSMENT PROCEDURES

Introduction

Berkeley County has completed outfall mapping for portions of its MS4 area and conducted dry weather field screenings of all outfalls in accordance with the County SWMP and IDDE Program. As the County population grows and the MS4 area expands, the County will continue development of its outfall mapping and screening program. The purpose of this Appendix is to describe procedures for completing a preliminary in-office study to identify areas of potential illicit discharge for further investigation in the field.

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 recommended in this Appendix D are intended to help 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, and provide insight on how to narrow your illicit discharge search.

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.

* Source: 2004 Center for Watershed Protection Illicit Discharge Detection and Elimination Guidance Manual

For new watershed areas that are being brought into the County's outfall screening program, the Desktop Assessment is used to guide initial field screening, and support initial IDDE program decisions. Key outcomes include:

- Screening problem catchments or subwatersheds within the MS4 area.
- Creation of GIS or other database system to track outfalls.
- Gaining an overall assessment as to the severity of illicit discharge problems within the MS4 area.
- Generation of basic mapping for subsequent field work.

Stormwater system inventory and outfall maps created in GIS can help manage the entire IDDE program and demonstrate compliance in annual reports.

Data Collection & Development

In order to narrow the illicit discharge search, certain GIS shapefiles or digital map data are needed to provide the necessary information to design an illicit discharge tracing system. Table 1 provides a list of data that is useful when performing the Desktop Assessment.

Each of the following layers should be imported into the data collector if possible for the use of field personnel when searching for or tracing illicit discharges to the water of the state.

Table 1. Useful Data for the Desktop Assessment

	DATA	LIKELY FORMAT
Recommended	Aerial photos or orthophotos	Digital map
	Subwatershed or catchment boundaries	Digital or hardcopy map
	Hydrology including piped streams	Digital or hardcopy map
	Land use or zoning	Digital or hardcopy map
	NPDES stormwater permittees	Digital data or map
	Outfalls	Digital or hardcopy map
	Sewer system, 1" = 200' scale or better	Digital or hardcopy map
	Standard Industrial Classification codes for all industries	Digital or hardcopy data
	Storm drain system, 1" = 200' scale or better	Digital or hardcopy map
	Street map or equivalent GIS layers	Digital or hardcopy map
Topography (5 ft contours or better)	Digital or hardcopy map	
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

Source: 2004 Center for Watershed Protection Illicit Discharge Detection and Elimination Guidance Manual

Outfall Catchment Areas

The drainage area for each outfall must be delineated on all maps used in the illicit tracing process. Once subwatersheds or catchments are delineated, the 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.

Adding the facility inventory information (e.g., locations of water and wastewater treatment plants, landfills, industries) to the drainage areas will enable potential pollutant source locations to be assigned to the correct outfall. Examples of sources of industrial non-stormwater entries into storm drainage systems can be found in Table 3.

Land use coverages can also be of use when determining which kind of pollutants can populate individual watershed areas. Examples of land uses with the potential to produce indirect pollutant discharges can be found in Table 2. 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
- Boundaries of the MS4 area
- City/County limits
- Major streets
- Streams

The data collected during this process is important as it forms the basis for the rest of the more detailed field investigations.

Preliminary Watershed Mapping

Preliminary stormwater system inventory and outfall maps generated from existing data can be beneficial to field personnel and can be as simple as including the hydrological, land use, and road layers on the system/outfall map. Maps with information such as watershed boundaries and land usage also help to provide a basis to prioritize the outfalls and watersheds by potential to contribute non-stormwater entries into the storm drainage system. The receiving waters and stormwater drainage outfalls must be identified and accurately located on the appropriate maps. When preparing the maps, full advantage should be taken of any existing and available information, specifically data listed in Table 1, Appendix D. Additional 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
- Data collected in the field from previous outfall inventories, flood studies, etc.
- Topographic maps
- Existing GIS data

- Pre-development stream locations
- City/County department personnel having knowledge of the area
- Aerial surveys

Using data from the stormwater system inventory/outfall maps and Desktop Assessment, initial characterization of subwatersheds can allow field techs to prioritize their investigations.

Preliminary Watershed Evaluation

A review of land uses in the watershed can assist in preliminary evaluation of illicit discharge potential within a watershed. The Land Use and Potential Generating Sites section includes guidance from the 2004 Center for Watershed Protection *Illicit Discharge Detection and Elimination Guidance Manual* for preliminary watershed evaluation by identification of potential pollutant generating sites based on land use.

A review of industrial sites present within the watershed should also be conducted to gauge the potential for non-stormwater discharges from industrial activities. The Industrial Categories and Potential Generating Sites section includes information useful for identifying the local industries most likely to contribute non-stormwater entries into the County's storm drainage system.

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 2, and described below.

Table 2. 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"> <input type="checkbox"/> Apartments <input type="checkbox"/> Multi-family <input type="checkbox"/> Single Family Detached 	<ul style="list-style-type: none"> <input type="checkbox"/> Car Washing <input type="checkbox"/> Driveway Cleaning <input type="checkbox"/> Dumping / Spills (e.g. leaf litter and RV/boat holding tank effluent) <input type="checkbox"/> Equipment Washdowns <input type="checkbox"/> Lawn/Landscape Watering <input type="checkbox"/> Septic System Maintenance/Overflow <input type="checkbox"/> Swimming Pool Discharges
Institutional	<ul style="list-style-type: none"> <input type="checkbox"/> Cemeteries <input type="checkbox"/> Churches <input type="checkbox"/> Corporate Campuses <input type="checkbox"/> Hospitals <input type="checkbox"/> Schools and Universities 	<ul style="list-style-type: none"> <input type="checkbox"/> Building Maintenance (e.g. power washing) <input type="checkbox"/> Dumping/Spills <input type="checkbox"/> Landscaping/Grounds Care (irrigation) <input type="checkbox"/> Parking Lot Maintenance (power washing) <input type="checkbox"/> Vehicle Washing
Municipal	<ul style="list-style-type: none"> <input type="checkbox"/> Airports <input type="checkbox"/> Landfills <input type="checkbox"/> Maintenance Depots <input type="checkbox"/> Municipal Fleet Storage Areas <input type="checkbox"/> Ports <input type="checkbox"/> Public Works Yards <input type="checkbox"/> Streets and Highways 	<ul style="list-style-type: none"> <input type="checkbox"/> Building Maintenance (e.g. power washing) <input type="checkbox"/> Dumping/Spills <input type="checkbox"/> Landscaping/Grounds Care (irrigation) <input type="checkbox"/> Outdoor Fluid Storage <input type="checkbox"/> Parking Lot Maintenance (power washing) <input type="checkbox"/> Road Maintenance <input type="checkbox"/> Spill Prevention/Response <input type="checkbox"/> Vehicle Fueling <input type="checkbox"/> Vehicle Maintenance/Repair <input type="checkbox"/> Vehicle Washing
Commercial	<ul style="list-style-type: none"> <input type="checkbox"/> Campgrounds/RV parks <input type="checkbox"/> Car Dealers/Rental Car Companies <input type="checkbox"/> Car Washes <input type="checkbox"/> Commercial Laundry / Dry Cleaning <input type="checkbox"/> Gas Stations/ Auto Repair Shops <input type="checkbox"/> Marinas <input type="checkbox"/> Nurseries and Garden Centers <input type="checkbox"/> Oil Change Shops <input type="checkbox"/> Restaurants <input type="checkbox"/> Swimming Pools 	<ul style="list-style-type: none"> <input type="checkbox"/> Building Maintenance (power washing) <input type="checkbox"/> Dumping/Spills <input type="checkbox"/> Landscaping/Grounds Care (irrigation) <input type="checkbox"/> Outdoor Fluid Storage <input type="checkbox"/> Parking Lot Maintenance (power washing) <input type="checkbox"/> Vehicle Fueling <input type="checkbox"/> Vehicle Maintenance / Repair <input type="checkbox"/> Vehicle Washing <input type="checkbox"/> Washdown of greasy equipment and grease traps
Industrial	<ul style="list-style-type: none"> <input type="checkbox"/> Auto recyclers <input type="checkbox"/> Beverages and brewing <input type="checkbox"/> Construction vehicle washouts <input type="checkbox"/> Distribution Centers <input type="checkbox"/> Food processing <input type="checkbox"/> Garbage truck washouts <input type="checkbox"/> Marinas, boat building and repair <input type="checkbox"/> Metal plating operations <input type="checkbox"/> Paper and wood products <input type="checkbox"/> Petroleum storage and refining <input type="checkbox"/> Printing 	<ul style="list-style-type: none"> <input type="checkbox"/> All commercial activities <input type="checkbox"/> Industrial process water or rinse water <input type="checkbox"/> Loading and un-loading area washdowns <input type="checkbox"/> Outdoor material storage (fluids)

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.

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.

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.

Industrial Categories and Potential Generating Sites

Table 3, below, can be used to identify the industries in each drainage area most likely to contribute non-stormwater discharge into the storm drainage system. The table provides the physical properties of the discharge expected based on industrial categories and classifications. The categories were defined according to the 1987 Standard Industrial Classification Manual codes (SIC code). Since 1997, Federal agencies including EPA have used the North American Industry Classification System (NAICS) as the industry classification system for federal economic study; however, SIC codes are still used by some organizations and government agencies for non-statistical purposes.

Table 3. Chemical and Physical Properties of Industrial Non-Stormwater Discharges

Industrial Categories Major Classifications SIC Group Numbers	Odor	Color	Turbidity	Floatables	Debris and Stains	Structural Damage	Vegetation	pH	Total Dissolved Solids
Primary Industries									
20: Food and Kindred Products									
201 Meat Products	Spoiled Meats, Rotten Eggs and Flesh	Brown to Reddish-Brown	High	Animal Fats, Byproducts, Pieces of Processed Meats	Brown to Black	High	Flourish	Normal	High
202 Dairy Products	Spoiled Milk, Rancid Butter	Gray to White	High	Animal Fats, Spoiled Milk Products	Gray to Light Brown	High	Flourish	Acidic	High
203 Canned and Preserved Fruits and Vegetables	Decaying Products Compost Pile	Various	High	Vegetable Waxes, Seeds, Skins, Cores, Leaves	Brown	Low	Normal	Wide Range	High
204 Grain Mill Products	Slightly Sweet & Musty, Grainy	Brown to Reddish Brown	High	Grain Hulls and Skins, Straw & Plant Fragments	Light Brown	Low	Normal	Normal	High
205 Bakery Products	Sweet and or Spoiled	Brown to Black	High	Cooking Oils, Lard, Flour, Sugar	Gray to Light Brown	Low	Normal	Normal	High
206 Sugar and Confectionary Products	NA	NA	Low	Low Potential	White Crystals	Low	Normal	Normal	High
207 Fats and Oils	Spoiled Meats, Lard or Grease	Brown to Black	High	Animal Fats, Lard	Gray to Light Brown	Low	Normal	Normal	High
208 Beverages	Flat Soda, Beer or Wine, Alcohol, Yeast	Various	Mod.	Grains, Hops, Broken Glass, Discarded Canning Items	Light Brown	High	Inhibited	Wide Range	High
21: Tobacco Manufactures	Dried Tobacco, Cigars, Cigarettes	Brown to Black	Low	Tobacco Stems & Leaves, Papers and Fillers	Brown	Low	Normal	Normal	Low
22: Textile Mill Products	Wet Burlap, Bleach, Soap, Detergents	Various	High	Fibers, Oils, Grease	Gray to Black	Low	Inhibited	Basic	High
23: Apparel and Other Finished Products	NA	Various	Low	Some Fabric Particles	NA	Low	Normal	Normal	Low
Material Manufacture									
24: Lumber & Wood Products	NA	NA	Low	Some Sawdust	Light Brown	Low	Normal	Normal	Low
25: Furniture & Fixtures	Various	Various	Low	Some Sawdust, Solvents	Light Brown	Low	Normal	Normal	Low

Industrial Categories Major Classifications SIC Group Numbers	Odor	Color	Turbidity	Floatables	Debris and Stains	Structural Damage	Vegetation	pH	Total Dissolved Solids
26: Paper & Allied Products	Bleach, Various Chemicals	Various	Mod.	Sawdust, Pulp Paper, Waxes, Oils	Light Brown	Low	Normal	Wide Range	Low
27: Printing, Publishing, and Allied Industries	Ink, Solvents	Brown to Black	Mod.	Paper Dust, Solvents	Gray to Light Brown	Low	Inhibited	Normal	High
31: Leather & Leather Products	Leather, Bleach, Rotten Eggs or Flesh	Various	High	Animal Flesh & Hair, Oils, Grease	Gray to Black, Salt Crystals	High	Highly Inhibited	Wide Range	High
33: Primary Metal Industries	Various	Brown to Black	Mod.	Ore, Coke, Limestone, Millscale, Oils	Gray to Black	High	Inhibited	Acidic	High
34: Fabricated Metal Products	Detergents, Rotten Eggs	Brown to Black	High	Dirt, Grease, Oils, Sand, Clay Dust	Gray to Black	Low	Inhibited	Wide Range	High
32: Stone, Clay, Glass, and Concrete Products	Wet Clay, Mud, Detergents	Brown to Reddish-Brown	Mod.	Glass Particles Dust from Clay or Stone	Gray to Light Brown	Low	Normal	Basic	Low
Chemical Manufacture									
28: Chemicals & Allied Products									
<i>2812 Alkalies and Chlorine</i>	Strong Halogen or Chlorine, Pungent, Burning	Alkalies – NA; Chlorine-Yellow to Green	Low	NA	Alkalies – White Carbonate Scale Chlorine - NA	High	Highly Inhibited	Basic	High
<i>2816 Inorganic Pigments</i>	NA	Various	High	Low Potential	Various	Low	Highly Inhibited	Wide Range	High
<i>282 Plastic Materials and Synthetics</i>	Pungent, Fishy	Various	High	Plastic Fragments, Pieces of Synthetic Products	Various	Low	Inhibited	Wide Range	High
<i>283 Drugs</i>	NA	Various	High	Gelatin Byproducts for Capsulating Drugs	Various	Low	Highly Inhibited	Normal	High
<i>284 Soap, Detergents & Cleaning Preparations</i>	Sweet or Flowery	Various	High	Oils, Grease	Gray to Black	Low	Inhibited	Basic	High
<i>285 Paints, Varnishes, Lacquers, Enamels and Allied Products (SB - Solvent Base)</i>	Latex - Ammonia SB - Dependent Upon Solvent (Paint Thinner, Mineral Spirits)	Various	High	Latex - NA SB - All Solvents	Gray to Black	Low	Inhibited	Latex-Basic SB - Normal	High

Industrial Categories Major Classifications SIC Group Numbers	Odor	Color	Turbidity	Floatables	Debris and Stains	Structural Damage	Vegetation	pH	Total Dissolved Solids
<i>286 Indust. Organic Chemicals</i>									
<i>2861 Gum and Wood Chemicals</i>	Pine Spirits	Brown to Black	High	Rosins and Pine Tars	Gray to Black	Low	Inhibited	Acidic	High
<i>2865 Cyclic Crudes, & Cyclic Intermediates Dyes, & Organic Pigments</i>	Sweet Organic Smell	NA	Low	Translucent Sheen	NA	Low	Highly Inhibited	Normal	Low
<i>287 Agricultural Chemicals</i>									
<i>2873 Nitrogenous Fertilizers</i>	NA	NA	Low	NA	White Crystalline Powder	High	Inhibited	Acidic	High
<i>2874 Phosphatic Fertilizers</i>	Pungent Sweet	Milky White	High	NA	White Emorphous Powder	High	Inhibited	Acidic	High
<i>2875 Fertilizers, Mixing Only</i>	Various	Brown to Black	High	Pelletized Fertilizers	Brown Emorphous Powder	Low	Normal	Normal	High
29: Petroleum Refining and Related Industries									
<i>291 Petroleum Refining</i>	Rotten Eggs, Kerosene, Gasoline	Brown to Black	High	Any Crude or Processed Fuel	Black Salt Crystals	Low	Inhibited	Wide Range	High
30: Rubber & Miscellaneous Plastic Products	Rotten Eggs, Chlorine, Peroxide	Brown to Black	Mod.	Shredded Rubber Pieces of Fabric or Metal	Gray to Black	Low	Inhibited	Wide Range	High
Transportation & Construction									
15: Building Construction	Various	Brown to Black	High	Oils, Grease, Fuels	Gray to Black	Low	Normal	Normal	High
16: Heavy Construction	Various	Brown to Black	High	Oils, Grease, Fuels, Diluted Asphalt or Cement	Gray to Black	Low	Normal	Normal	High
Retail									
52: Building Materials, Hardware, Garden Supply, and Mobil Home Dealers	NA	Brown to Black	Low	Some Seeds, Plant Parts, Dirt, Sawdust, or Oil	Light Brown	Low	Normal	Normal	Low
53: Gen. Merchandise Stores	NA	NA	NA	NA	NA	Low	Normal	Normal	Low
54: Food Stores	Spoiled Produce, Rancid, Sour	Various	Low	Fragments of Food, Decaying Produce	Light Brown	Low	Flourish	Normal	Low

Industrial Categories Major Classifications SIC Group Numbers	Odor	Color	Turbidity	Floatables	Debris and Stains	Structural Damage	Vegetation	pH	Total Dissolved Solids
55: Automotive Dealers & Gasoline Service Stations	Oil or Gasoline	Brown to Black	Mod.	Oil or Gasoline	Brown	Low	Inhibited	Normal	Low
56: Apparel & Accessory Stores	NA	NA	Low	NA	NA	Low	Normal	Normal	Low
57: Home Furniture, Furnishings, & Equip. Stores	NA	NA	Low	NA	NA	Low	Normal	Normal	Low
58: Eating & Drinking Places	Spoiled Foods Oil & Grease	Brown to Black	Low	Spoiled or Leftover Foods	Brown	Low	Normal	Normal	Low
Coal Steam Electric Power	NA	Brown to Black	High	Coal Dust	Black Emorphous Powder	Low	Normal	Slightly Acidic	Low
Nuclear Steam Electric Power	NA	Light Brown	Low	Oils, Lubricants	Light Brown	Low	Normal	Normal	Low

Source: 2004 Center for Watershed Protection Illicit Discharge Detection and Elimination Guidance Manual, Appendix K: Specific Considerations for Industrial Sources of Inappropriate Pollutant Entries to the Storm Drainage System (Adapted from Pitt, 2001)

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.

Prioritization

The Desktop Assessment Method draws on existing background data and anecdotal information to initially characterize illicit discharge potential at the subwatershed level. The information gathered in the Desktop Assessment can be used to rank the illicit discharge potential throughout the subwatershed based on a composite score, or diagnosed as having a low, medium or high risk.

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

The rankings provide the County a means for prioritizing its dry weather outfall screening activities.

Conclusion

The Desktop Assessment can shape the overall direction of the IDDE program. For example, if the Desktop Assessment reveals significant potential for severe discharges in a particular MS4 area, this information would allow the County to target its resources toward locating, identifying and resolving these illicit discharge problems. By contrast, if the Desktop Assessment indicated low risk of illicit discharge, the County could shift its resources to higher risk areas or other minimum control measures outlined in the SWMP.

Appendix E – Visual Inspection and Complaint Forms

	<p>BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM 212 Oakley Plantation Drive Moncks Corner, SC 29461-5036 Main Line: 843.723.3800 843.719.4195</p> <p>COMPLAINT FORM</p>
---	--

Date: _____

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

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

Description of Problem: _____

<u>For Inspector's Use Only</u>			
Inspector Name: _____			
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	If yes, briefly explain: _____ _____
Actions Taken:			
Follow Up Inspection Scheduled?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A Date: _____
Contact Property Owner?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Enforcement Action Needed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

**** Inspection is invalid without pictures**

Appendix F – Dry Weather Screening and IDDE Notification Letters



BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM

212 Oakley Plantation Drive

Moncks Corner, SC 29461

843.719.4195

Charleston: 843.572.4400 (ext. 4195)

St. Stephens: 843.567.2061 (ext. 4195)

webswmp@berkeleycountysc.gov

PUBLIC NOTIFICATION LETTER

Month DD, YYYY

Dear Property Owner,

Berkeley County is conducting an outfall inventory of the County's stormwater management system to meet the requirements of our National Pollutant Discharge Elimination System (NPDES) stormwater permit, as required by EPA and SCDHEC. (Insert Company Name) has been contracted by the County to perform stormwater system data collection for this permit. The data collected will include features related to the storm drainage system, including manholes, inlets, pipes, culverts, ponds, channels, and outfalls to creeks and streams throughout the County. Please allow (Insert Company Name)'s field personnel access to stormwater system components on your property for the purpose of data collection.

(Insert Company Name) personnel are part of the stormwater data collection team. Field personnel will be identified by name badges, safety vests and/or other items of identification. Each will carry identification and can provide additional site specific information if necessary. Field personnel will take measurements and will use GPS or survey equipment and cameras in order to collect data.

Berkeley County and (Insert Company Name) appreciate your cooperation and understanding. If you have any questions or would like any further information please contact Berkeley County Stormwater at (Phone Number).

Sincerely,

County Engineer



BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM

212 Oakley Plantation Drive
Moncks Corner, SC 29461

NOTICE OF ILLICIT DISCHARGE

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 Berkeley County 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.

If you have questions concerning this violation, you can contact our office at 843-719-4195.
Sincerely,

Name

Title



BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM

212 Oakley Plantation Drive
Moncks Corner, SC 29461

SECONDARY NOTICE OF ILLICIT DISCHARGE

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 843-719-4195.

Add additional text as necessary. Sincerely,

Name

Title



BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM

212 Oakley Plantation Drive
Moncks Corner, SC 29461

NOTICE OF VIOLATION

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/20XX. The Berkeley County Stormwater Department requests that you promptly remove the illicit discharge before additional action is necessary. Berkeley County Stormwater 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 843-719-4195.

Add additional text as necessary

Sincerely,

Name

Title



BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM

212 Oakley Plantation Drive
Moncks Corner, SC 29461

SECONDARY NOTICE OF VIOLATION

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/20XX. The Berkeley County Stormwater Department requests that you promptly remove the illicit discharge before additional action is necessary. Berkeley County Stormwater 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 843-719-4195.

Add additional text

Sincerely,

Name

Title

Statement of Limitations

This report and the intellectual property herein has been prepared for the sole utilization of Berkeley County. Any unauthorized use, modification or copying, whole or in part, without the written consent of Berkeley County and AECOM may be considered copyright infringement.

About AECOM

AECOM is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses and organizations in more than 150 countries. As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A Fortune 500 firm, AECOM had revenue of approximately \$17.4 billion during fiscal year 2016. See how we deliver what others can only imagine at aecom.com and [@AECOM](https://twitter.com/AECOM).

AECOM

4016 Salt Pointe Pkwy
North Charleston, SC 29405
T 843.767.4602

Appendix F: Enforcement Response Plans

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.

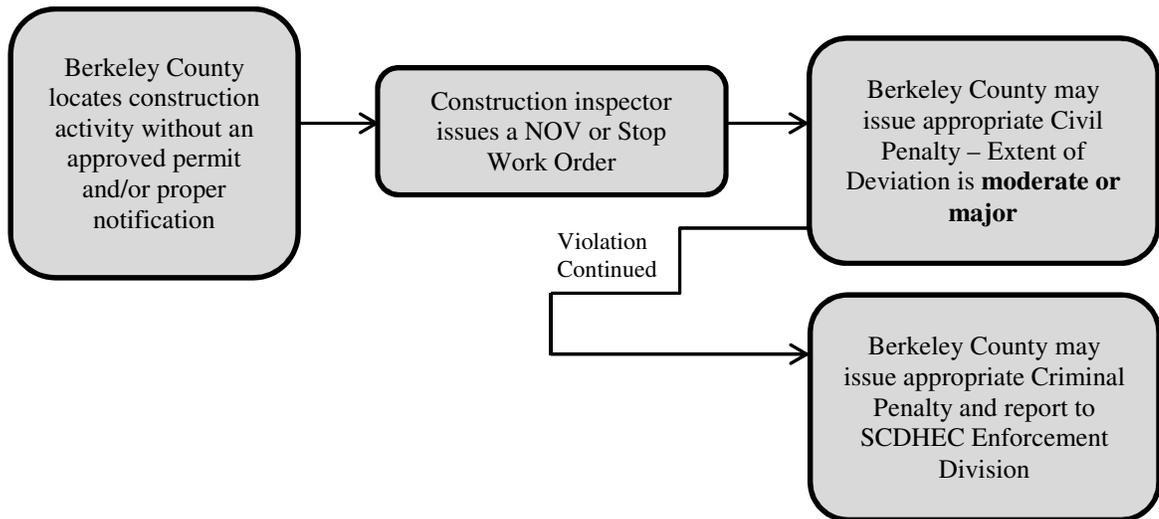
III. VIOLATION CATEGORIES

A. Construction/Permitting Violations

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

Berkeley County response:

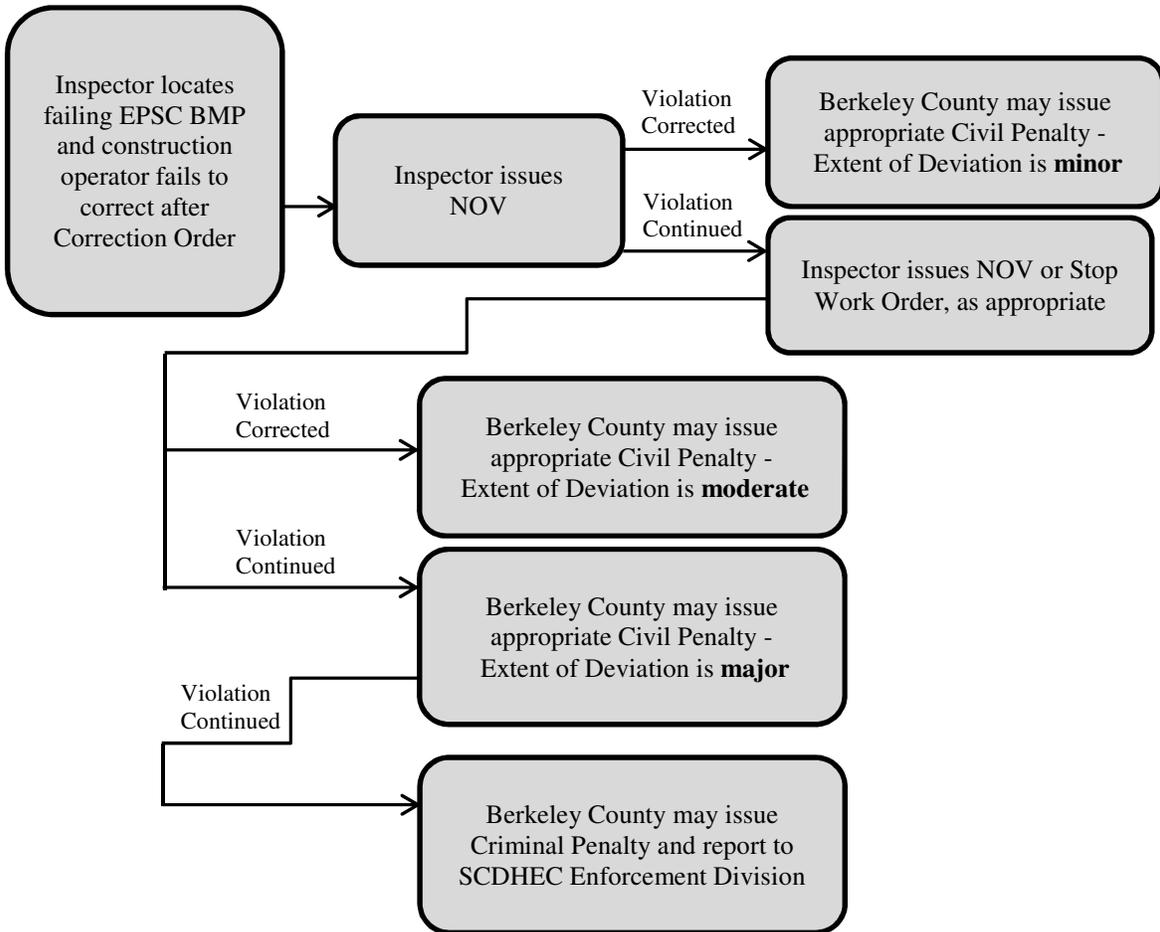
Berkeley County may issue a Notice of Violation (NOV) or Stop Work Order, as appropriate, for all violations involving initiation of construction activity without a site development/land disturbing/grading permit and proper notification. Appropriate Civil or Criminal Penalties may be issued. A repeat 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.



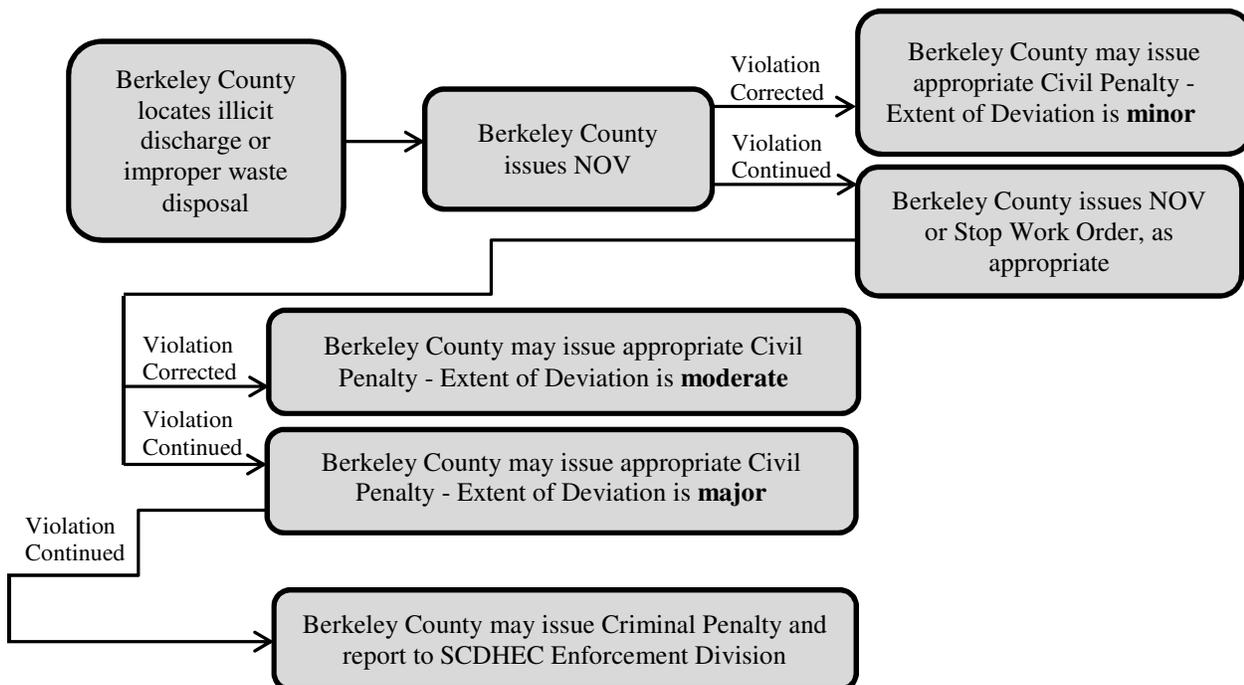
B. Illicit Discharge/ Illicit Connection/ Improper Waste Disposal

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.

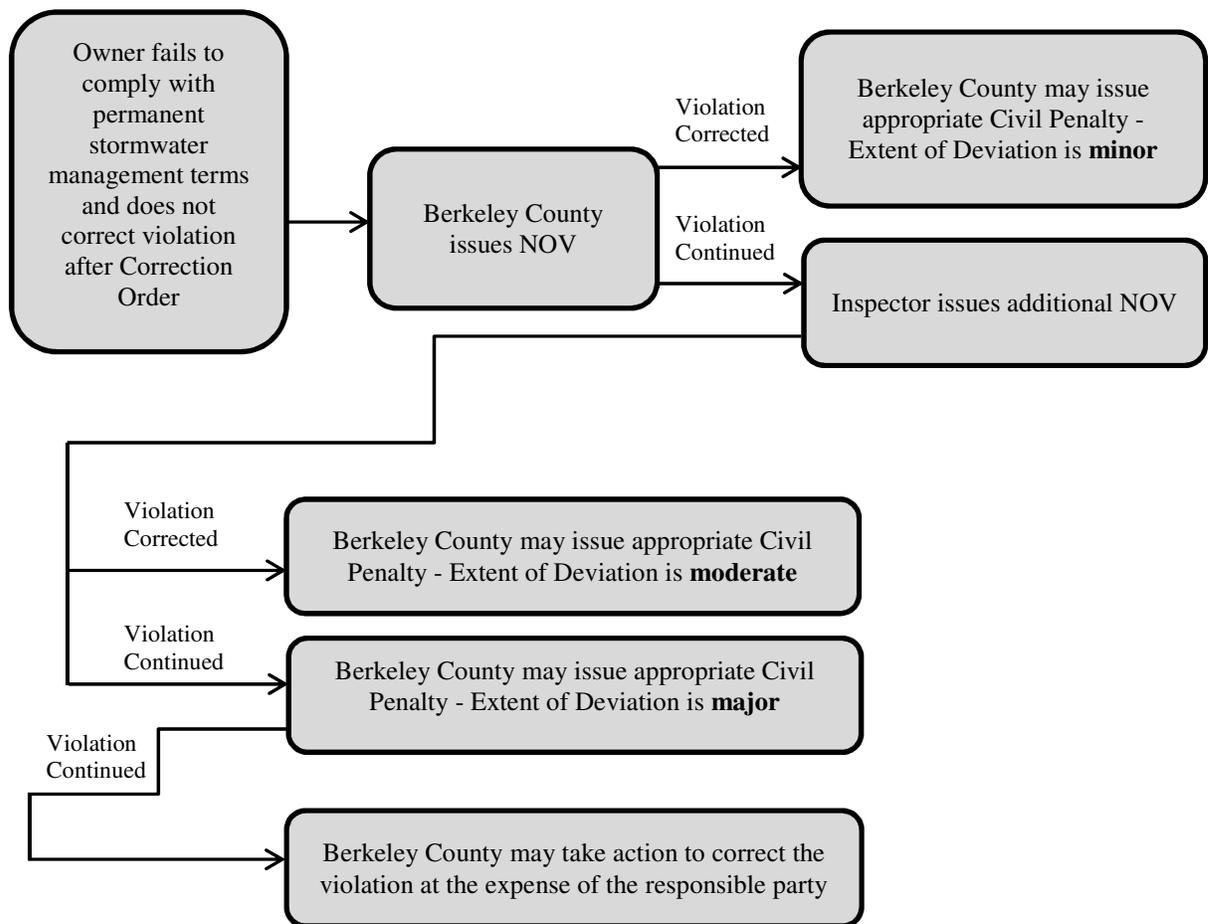
Berkeley County may issue a Correction Order prior to the initial Notice of Violation (NOV). Berkeley County will issue an additional NOV or Stop Work Order, as appropriate, after 30 days if the illicit discharge has not been eliminated and no schedule for elimination has been submitted. Berkeley County 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.

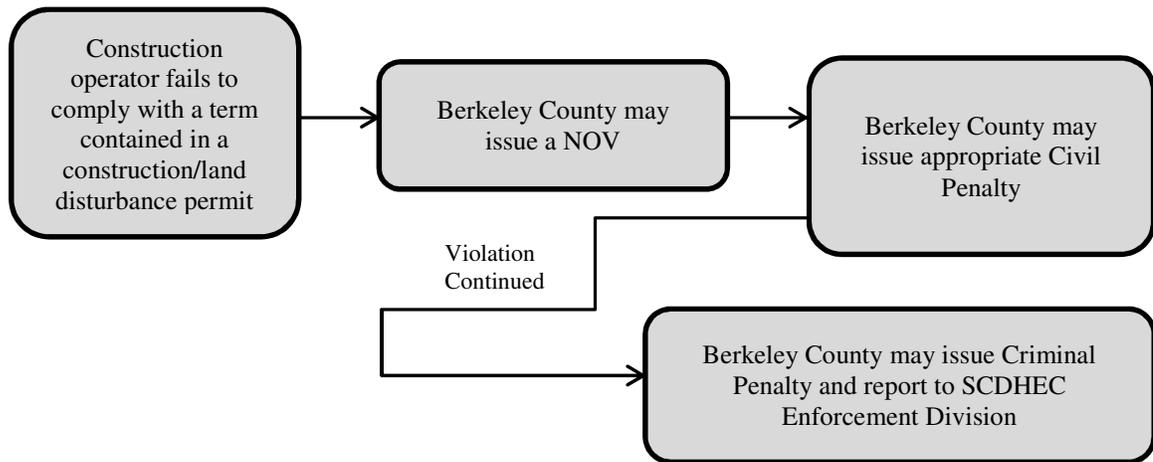


D. Failure to Comply with Permit

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.

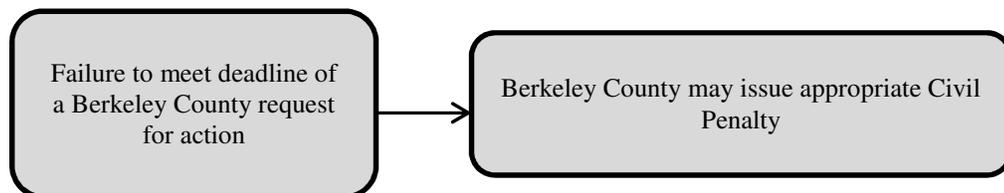


E. Failure to Comply with a County Request

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.

City of Goose Creek Enforcement Response Plan



January 2015

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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 Goose Creek which can be used to achieve compliance for practices as stated in the City's Stormwater Management Ordinance 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 Goose Creek 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 Goose Creek. 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 Goose Creek 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. If an enforcement action results in civil litigation, the violator shall be responsible for court costs related to the litigation. 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 -> Stop Work Order -> Citation -> Denial of Certificate of Occupancy -> 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

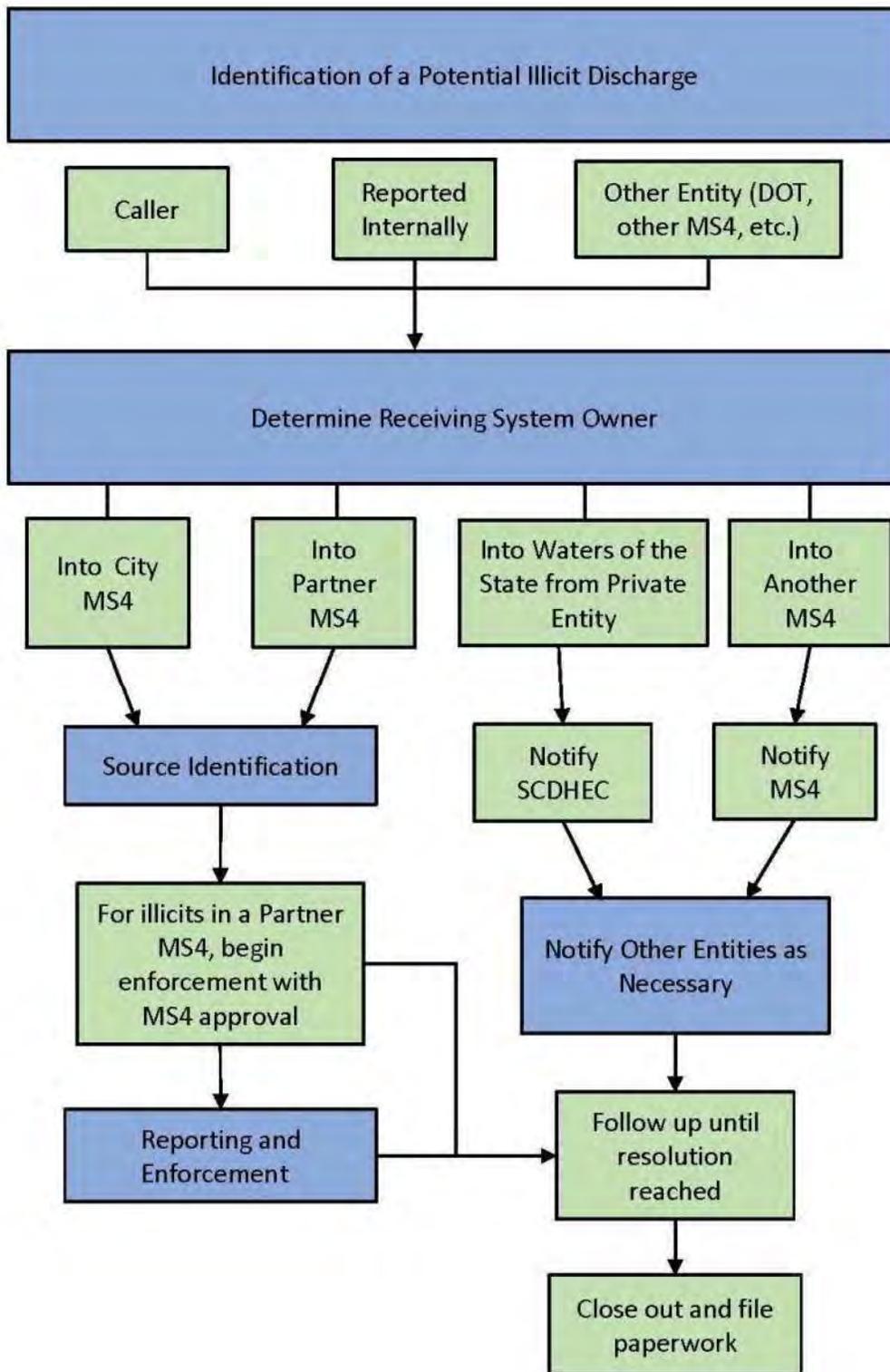
Evidence of an illicit discharge or improper disposal must be reported immediately to the City of Goose Creek’s Public Works Department. If the illicit discharge is suspected to be an immediate danger to the health of humans and animals and/or the environment, the City is to immediately contact SCDHEC 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 Goose Creek requires all developers of new and re-development projects to sign a Maintenance Agreement 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 Violation 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

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:

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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.

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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.

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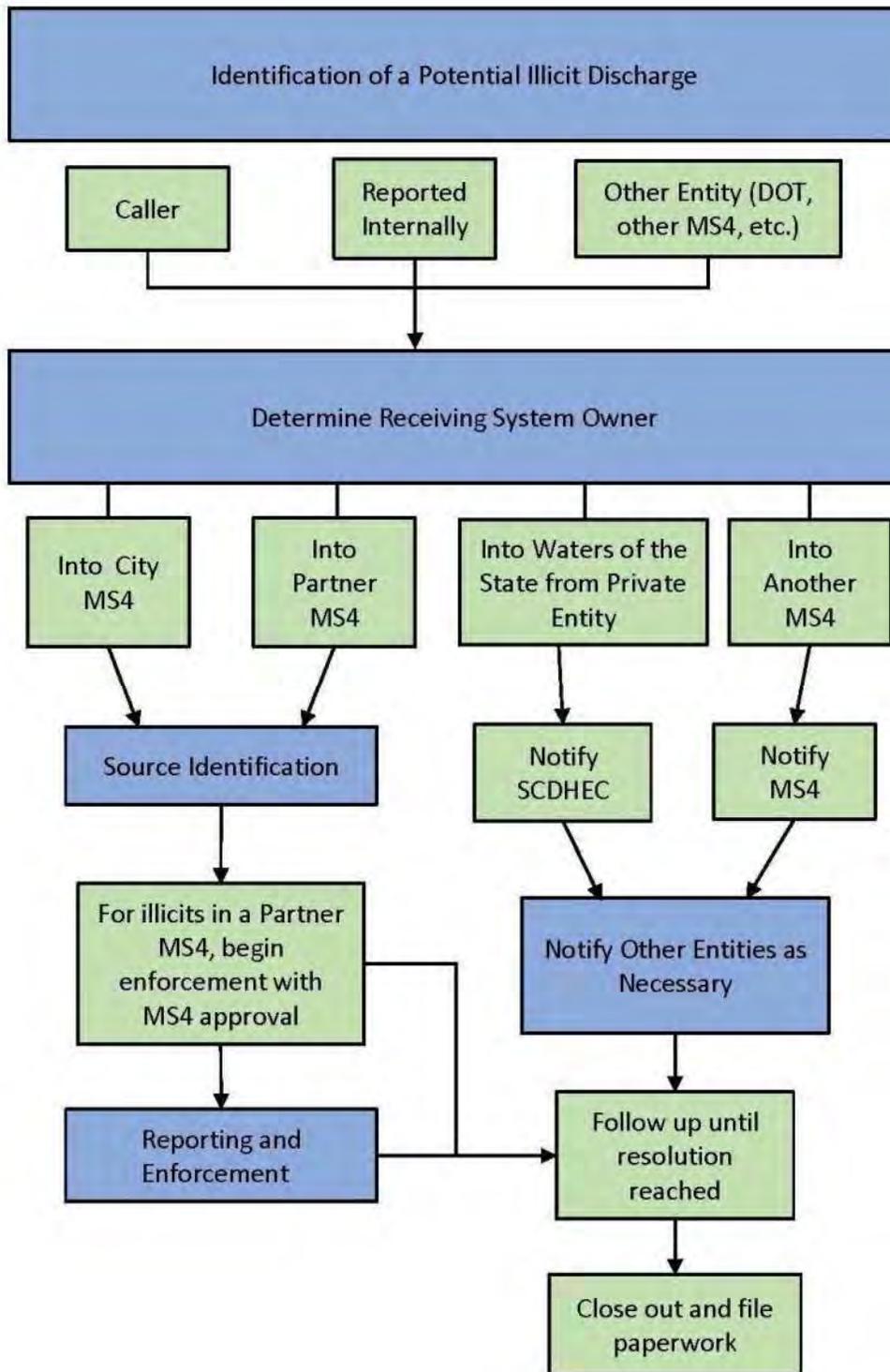
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Figure 1 represents the steps to be taken for illicit detection or improper disposal.

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 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 furnishing 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 modes 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. 4H₂O 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 newspapers, radio, interviews and advertisements to address specific needs.

INVOLVE

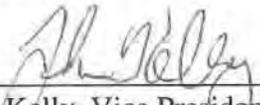
- 5.12. Provide at least one (1) opportunity for general public and at least one (1) opportunity for commercial audiences to be involved in improved watershed management and stormwater awareness.
- 5.13. Promote and expand web-based tools to encourage learning about and adoption of low impact development 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 permit 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.

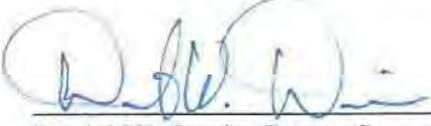


John Kelly, Vice President

Clemson University

Date

3/5/13



Daniel W. Davis, County Supervisor

Berkeley County

Date

2/25/13

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 to

- 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.

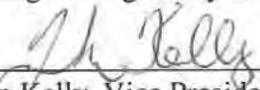
- Determine the appropriate public awareness campaign with BERKELEY COUNTY and the community's guidance on target behaviors, audiences, pollutants and established venues and modes for outreach. Some program implementation approaches, BMPs (*i.e.*, the program actions/activities), and measurable goals are contained in the individual agreement and seek to
 - Form partnerships,
 - Use and develop education materials and strategies, and
 - 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

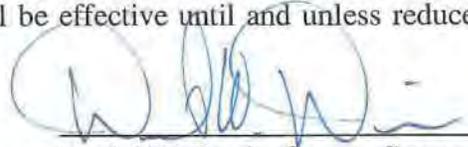
- Provide opportunities for citizens and various audiences to become active in stormwater management.
- Provide program accountability measures including estimated number of people contacted, publications produced and distributed, and measures of outreach impacts and possible behavior change, and other 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

 2/5/13

 Date

Berkeley County/

 2/25/13

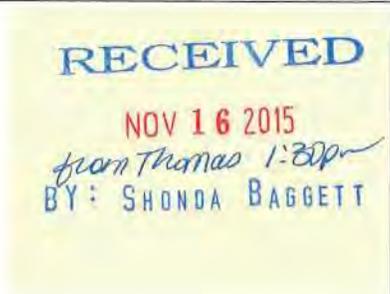
 Date

**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



October 20, 2015

Dennis Harmon, City Administrator
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,

William W. Peagler, III
County Supervisor

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

✓ Cl. → 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, Goose 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:

Marya K. Dix

[Signature]

[Signature]

[Signature]

BERKELEY COUNTY

By: [Signature]

Its: County Superior

THE CITY OF GOOSE CREEK

By: Michael J. Miller

Its: Mayor

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 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.

- 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).
- 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.
- 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 TMDLs and discharges to impaired waters as required by the NPDES MS4 Permit.

Public Education and Outreach on Stormwater Impacts:

- 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.
- 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.
- 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:

- 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:

- 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 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.

Monitoring, Record Keeping and Reporting:

- 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.

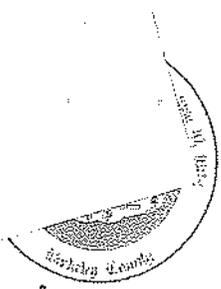
- The County will maintain records of illicit discharge and good housekeeping training of municipal staff.
- The County will maintain records of all municipal facility assessments and high priority inspections within the City.
- The County will maintain records of all stormwater system maintenance, catch 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

Tom
For your
files
Mace

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
William W. Peagler, III
County Supervisor

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

LEGAL DEPARTMENT
SEP 16 2015
BERKELEY COUNTY

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 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 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: 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 9th day of October, 2015.

SIGNED, SEALED & DELIVERED
IN THE PRESENCE OF:

Myra K. Dip
[Signature]

BERKELEY COUNTY

By: [Signature]

Its: COUNTY SUPERVISOR

Kimberly C. Peters
Clark of Council

THE CITY OF HANAHAN

By: [Signature]

Its: CITY ADMINISTRATOR

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 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.

- 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).
- 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.
- 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 TMDLs and discharges to impaired waters as required by the NPDES MS4 Permit.

Public Education and Outreach on Stormwater Impacts:

- 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.
- 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.
- 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:

- 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:

- 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 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.

Monitoring, Record Keeping and Reporting:

- 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.

- 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.

Appendix I: Berkeley County Pollution Prevention/Good Housekeeping Manual



BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM

POLLUTION PREVENTION/GOOD HOUSEKEEPING MANUAL

**Adopted February 23, 2011
Revised March 2018**

**212 Oakley Plantation Drive
Moncks Corner, SC 29461
Telephone: 843.719.4195**

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1.0 INTRODUCTION

Berkeley County has developed and is implementing a program for pollution prevention/good housekeeping to meet conditions 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 includes 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,
- Identify appropriate best management practices and measurable goals for preventing or reducing the amount of stormwater pollution generated by county/municipal operations.
- Prioritize County owned and/or operated storm water management systems/structures and implement a maintenance schedule.
- Develop 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.
- Inspect and maintain, wherever and whenever necessary, all municipally-owned or maintained structural stormwater controls.
- Maintain all municipally owned green infrastructure practices through regularly scheduled maintenance activities.

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. A list of County and City owned, and/or operated facilities can be found in Appendix A. This manual includes information from the Berkeley County staff and the Urban Subwatershed Restoration Manual No. 9: Municipal Pollution Prevention/ Good Housekeeping Practices Version 1.0 produced by the Center for Watershed Protection.

Berkeley County entered into an Inter-Governmental Agreement (IGA) with the Cities of Hanahan and Goose Creek in October 2015. This IGA makes the County responsible for ensuring compliance with all six (6) minimum measures of the NPDES Phase II MS4 Permit, including development and implementation of the pollution prevention/good housekeeping program. Throughout this manual, wherever there is a reference to Berkeley County facilities, operations or projects, it also applies to the municipalities of Hanahan and Goose Creek.

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

Every day, 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. A specific pollution prevention program activity that Berkeley County has recently undertaken to improve water quality is implementation of a catch basin maintenance program. Utilization of a vacuum truck and crew has allowed the County to remove debris, trash and sediment (with attached pollutants) from catch basins prior to potentially impacting downstream waterbodies.

Construction Site with No Erosion or Sediment Controls



Animal Shelter Pet Waste Washed into Ditch



Uncovered Storage Barrels at Public Works Yard



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

Stormwater System Cleanout



Pet Waste Pick-Up Station



Covered/Contained Fuel Tanks



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
Animal Shelters	●	●	○	○	○	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. One program that Berkeley County has initiated to address this issue is an aggressive stormwater system maintenance program. The County has identified and prioritized County owned/operated facilities and is systematically performing cleaning/vacuuming as necessary to meet schedules identified in a ranking matrix. A list of Berkeley County, City of Goose Creek and City of Hanahan owned/operated facilities can be found in Appendix A. The prioritization matrix used by the County to identify necessary maintenance frequencies is locate in Appendix B.

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
- Animal Shelters

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
Animal Shelters	Animal Washing/Handling, Lawn/Turf Maintenances, Waste Management

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
Animal Shelters	○	●	X	X	X	Bacteria
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). Several 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. While animal shelters do not typically have the potential for a number of pollutants associated with other hotspot facilities, they can be a major contributor of bacteria and nutrients if proper best management practices are not used.



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.

Berkeley County's pollution prevention and good housekeeping inspection program was initiated in 2010 and has been executed in two main phases. The first phase of the program, conducted in 2010, included an initial audit of select municipal activities. These audit results were used to provide a baseline assessment of the pollutant potential at municipal sites and to guide the development of good housekeeping practices by County personnel.

The second phase of the County's program was initiated in 2015, when the County developed a comprehensive list of all County owned municipal facilities and any activities at each location which might harm the water quality of stormwater runoff. This list of identified municipal facilities with any pollution potential was selected for a thorough inspection to determine whether each constituted the designation of a "high priority" facility. A custom inspection form was developed and utilized to document all inspection findings at each listed facility and inspections were conducted in June of 2015.

A new “high priority” facility list was generated using the inspection results conducted in June 2015, as well as new facilities owned and operated by the co-permittees, City of Goose Creek and City of Hanahan. The facilities on this new comprehensive list were inspected in September 2016 and November 2017 utilizing the customized assessment forms to document all inspection findings.

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 wash water to sanitary sewer system, proper disposal of used fluids, disconnected storm drains, automatic shutoff nozzles, signs, spill response plans, spill cleanup materials, dry cleanup 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 cleanup materials, dry cleanup 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 & Vegetation 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	
Stormwater System Maintenance & Repair	Prioritization of stormwater systems with high potential for negative impacts if unmaintained, routine cleaning/vacuuming of catch basins, identification of damaged or deficient systems and repair/replacement
Spill Prevention and Response Plans	Identification of spills that require special cleanup, materials, inventory, maximum cleanup amount, facility map, spill kit inventory and associated labeling, employee training log.

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, costlier 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. A spill prevention and response plan should be incorporated for hotspot facilities (i.e. fleet maintenance). A sample Berkeley County plan is located in Appendix D.

3.3 CONSTRUCTION PROJECT MANAGEMENT

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

These County funded construction projects can have several 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 regarding 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 will be part of any County construction project and Berkeley County Ordinance 14-11-36 will 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 many water quality and water quantity benefits and, if carefully designed, can provide several 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. A list of all Berkeley County, City of Goose Creek, and City of Hanahan owned/operated facilities, and their associated BMPs, has been created and can be found in Appendix A. 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. Once inspected the County owned/operated facilities should be prioritized regarding the facilities which need most attention for routine maintenance activities. Berkeley County's stormwater system maintenance prioritization matrix is contained in Appendix B.

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 species if original cover is not established. • 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
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A field investigation should regularly be done to assess current County pollution prevention/good housekeeping practices for street repair and maintenance activities. Once the investigations are done a brief implementation plan should be created if practices/activities are deemed to be causative of pollution. The plan will summarize the results of the assessment as it relates to 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 will also include a schedule that describes when the prescribed pollution prevention/good housekeeping practices will be implemented. The contents of the implementation plan will 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.

The Berkeley County Stormwater Design Standards Manual (2009) contains additional information in regard to catch basins that may be encountered during the County's maintenance process. Materials and construction of storm drainage structures (catch basins, junction boxes, control structures, etc.) are as specified in Section 719 of the SCDOT specifications (2013). Roadway catch basins are typically SCDOT Type 9, Type 16, Type 17 or Type 18 Catch Basins based on the specific application.

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.

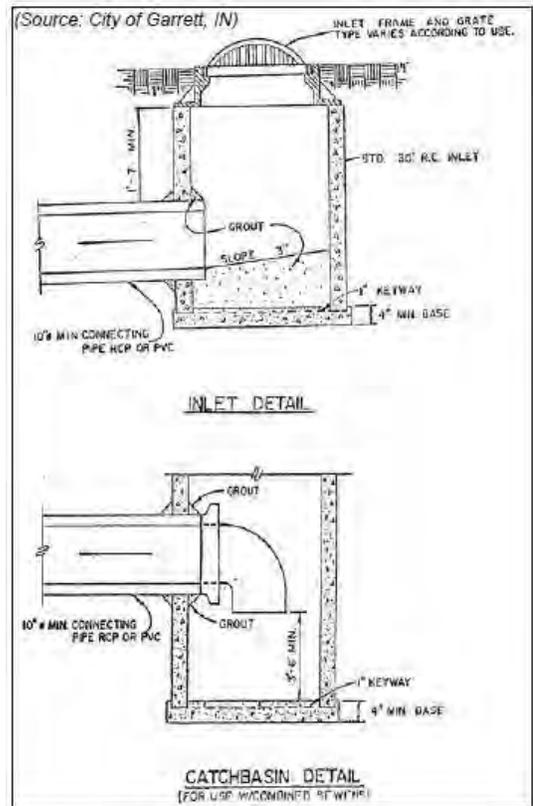


Figure 3-6: Catch Basin Detail

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 (see priority matrix in Appendix B):
 - 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

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. Vaccon)	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. This type of vacuum combination jet cleaning equipment is what is being utilized by Berkeley County for stormwater system maintenance (see following photograph).

The County initiated a comprehensive catch basin/stormwater system cleaning program in April 2017 utilizing a vacuum truck previously owned and operated by the Berkeley County Water and Sanitation Department. This catch basin/stormwater system maintenance program is based on the assessment and prioritization of County owned facilities (as required by the County's NPDES Phase II MS4 Permit) as well as in response to service requests. A summary of the catch basin prioritization matrix for public systems is contained in Appendix B. This summary includes the established rating system with descriptions, criteria for rating and recommendations on the number of suggested scheduled cleanings.



Figure 3-7: Catch Basin Maintenance Operation

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 plantlists • 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 regularly 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 if it is found that the activities are thought to be causative of pollution.

The plan will summarize the results of the assessment as it relates to the current County pollution prevention/good housekeeping practices and the practices that will be used to reduce any stormwater pollution generated by the park and landscape maintenance activities. The plan will also include a schedule that describes when the prescribed pollution prevention/good housekeeping practices will be implemented. The contents of the implementation plan will be reviewed with the individual who manages the park and landscape maintenance activities.

3.8 ANIMAL SHELTERS

Animal Care and Handling Facilities

Since Berkeley County is currently responsible for an animal shelter on Cypress Gardens Road, included in this Manual is information on pollution prevention practices for these types of facilities. This animal shelter houses small animals (i.e. cats and dogs) as well as occasionally horses and other farm animals.

Pollutant sources at the animal shelter include, but are not limited to, the following:

- Animal washing
- Feeding / grazing
- Urine / feces and manure deposits
- Unpaved or non-vegetated areas

Pollutants can include:

- Coliform bacteria
- Nutrients
- Sediment

Approach

Minimize exposure of rain and runoff to animal care and handling areas by using cover and containment. In and around these areas, use good housekeeping to minimize the generation of pollutants. Make stormwater pollution prevention BMPs a part of standard operating procedures and the employee training program.

Source Control BMPs

Proposed best management practices are listed by activity.

Table 3-11: Pollution Prevention/Good Housekeeping Practices Commonly Used for Animal Handling Facilities

Activity	Pollution Prevention/Good Housekeeping Practices
Animal Handling/Washing	<ul style="list-style-type: none"> • Use dry cleaning methods (i.e. sweeping or vacuuming) to clean animal handling areas regularly. • Properly dispose of droppings, uneaten food, and other potential contaminants. • Do not discharge wash water to storm water drains or other conveyances. • Block the storm drain and contain the runoff for proper disposal. • Wash water should be collected and pumped to the sanitary sewer, do not allow wash water to enter storm drains. DO NOT discharge wash water to sanitary sewer until contacting the local sewer authority to find out if pretreatment is required. • Keep animals in paved and covered areas, if feasible. • If keeping animals in covered areas is not feasible, cover the ground with vegetation or some other type of ground cover such as mulch. • Prevent animals from moving away from controlled areas where BMPs are in use (e.g. fencing, leashing, etc.).

Horse Management	<ul style="list-style-type: none"> • Site Layout Considerations <ul style="list-style-type: none"> ○ Site barns, manure storage, and other high-use areas on higher ground when possible or on the portion of property that drains away from storm drains, conveyances, or waterways. • Use grassed ditches, berms, or subsurface drains and properly sized roof gutters and downspouts to divert clean runoff around barnyard manure and sediment. • Divert contaminated runoff from manured areas away from storm drains or conveyances. • Focus on protecting the handling area's soil and vegetative cover. Prevent bare areas from forming. • Keep animals away from wet fields when possible. • During heavy rainfall, consider indoor feeding. • Clean up manure and soiled bedding regularly, especially during wet weather. • After cleanup, during the arid summer, water the areas where horses frequently deposit manure to promote decomposition. • Store horse waste in sturdy, insect-resistant, and seepage-free units that have an impervious surface bottom and a cover to prevent leaching and runoff, such as: <ul style="list-style-type: none"> ○ Plastic garbage cans with lids ○ Fly-tight wooden or concrete storage sheds ○ Composters • Compost. Keep compost piles moist, and well aerated to promote decomposition. • Give away composted material to local greenhouses, nurseries and botanical gardens. • Transport manure to topsoil companies or composting centers.
Maintenance	<ul style="list-style-type: none"> • Clean storm drain inlets on a regular schedule and after large storms. • Maintain BMPs to reduce potential sediment runoff from outside exposed areas and any unpaved parking lot(s).
Training	<ul style="list-style-type: none"> • Install and alert employees to no dumping stencils on storm drains/inlets. • Train employees on BMPs, stormwater discharge prohibitions, and wastewater discharge requirements. • Train employees on proper spill containment and cleanup. • Establish a regular training schedule, train all new employees, and conduct annual refresher training. • Use a training log or similar method to document training.
Chemical Management	<ul style="list-style-type: none"> • Use Integrated Pest Management (IPM) or less-toxic methods for insect and weed control. • Use chemical insecticides and herbicides as a last resort. Always properly store and dispose of chemical pesticides.

3.9 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. Any County employees that are frequently in the field should be trained on how to identify and report any suspected illicit discharges.

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 3-12: 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 an appropriate application of pesticides, herbicides and fertilizers • No mow areas • Benefits of trees, native and naturalized species
Animal Shelters	<ul style="list-style-type: none"> • Animal shelter staff • Landscaping staff 	<ul style="list-style-type: none"> • Animal handling and washing • Waste management • Maintenance • Chemical management

Berkeley County has implemented a progressive pollution prevention/good housekeeping employee training program that now includes participants from the Cities of Goose Creek and Hanahan. The training program has historically consisted of half-day workshops that includes Powerpoint presentations, videos, question and answer sessions and a short quiz on good housekeeping as well illicit discharge detection and elimination (IDDE).

The training workshops target key County and municipal personnel to include stormwater staff, roads and bridges, maintenance garage, fleet management, facilities and grounds, mosquito abatement, and building and codes. A template of the agenda and sample completion certification utilized by Berkeley County for the pollution prevention/good housekeeping training workshops can be found in Appendix E.

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Appendix A
List of Berkeley County, Cities of Goose Creek and Hanahan
Owned/Operated Facilities

LIST OF BERKELEY COUNTY GOVERNMENT FACILITIES

Facilities & Grounds Dept. Description of Services

Yellow = Building & Grounds Maintenance with custodial services

Light Green = Building & Grounds Maintenance only

Blue = Building Maintenance only when requested.

Green = Grounds Maintenance Only

Orange = Floor Plan Available

Limited to Structure Maintenance per Lease

Facility Occupied By----- C=County
S=State
O=Other

Berkeley County Facilities	Year Built	Address	Approx. Sq. Ft.	Utilities Paid by:	Berkeley County is the:	Occupied By:	C	S	O	BMP Type
223 North Live Oak Bldg.	1952/2007	223 North Live Oak Dr., Moncks Corner, SC29461	48,000	F&G	Owner	See (a) thru (e)				
(a) Sheriff		Complete Bldg Renovated in 2007-8	15,300			Sheriff's staff	X			
(b) Central Summary Court			9,750			Magistrate's staff	X			
(c) Sheriff			1,570			EMS staff	X			
(d) EPD/EOC			3,400			EPD/EOC staff	X			
(e) I.T.			1,370			I.T. staff	X			
Training/Sheriff			1,290			Various departments for training/meetings	X			
Clerk of Court			260			Evidence Vault	X			
911 Dispatch Emer. Radio Rm			156			Back up Communications room	X			
911 Communications Building	1990	223 North Live Oak Dr., Moncks Corner, SC29461	2,091	F&G	Owner	911 Communications staff	X			
Guardian AD LITEM		111 Pine Street, Moncks Corner, SC 29461	900	Guardian AD LITEM	Owner	Guardian AD LITEM		X		
Facilities & Grounds	Mid-70's	223 North Live Oak Dr., Moncks Corner, SC29461	10,140	F&G	Owner	F&G Employees	X			
Portable Storage Unit		2 units 320sqft. Each	320			F&G Employees	X			
Portable Storage Unit			320			In use/Admin Services/Records Storage	X			
Public Works Building	Mid-70's	223 North Live Oak Dr., Moncks Corner, SC29461	16,470	F&G	Owner	See (a) thru (d)				
(a) Roads & Bridges			8,355			Roads and Bridges staff	X			
(b) Purchasing			3,290			Purchasing staff	X			
(c) Garage			10,080			Garage staff	X			
<i>Garage Portable Storage Unit</i>			320			Vehicle/Equipment Parts Storage	X			
(d) EMS Storage			576			Public Works staff	X			
Hoover Storage Building-PWD	2004	223 North Live Oak Dr., Moncks Corner, SC29461	900	F&G	Owner	Storage in use	X			
Mosquito Abatement Office Bldg	2013	223 North Live Oak Dr., Moncks Corner, SC29461	2655		Owner	Mosquito Abatement staff	X			2- Ponds
Mosquito Abatement Storage	2013	223 North Live Oak Dr., Moncks Corner, SC29461	2655		Owner	Chemicals Trucks	X			
Maude Callen Building	1983	Belt Drive, Moncks Corner, SC 29461	26,700		Owner	See (a) thru (d)				
(a) Head Start		4 Belt Drive, Moncks Corner, SC 29461	8,900	F&G	Owner	Unoccupied/ Records Storage				
(c) Voter Registration		6 Belt Drive, Moncks Corner, SC 29461	3,317	F&G		Election Commission staff	X			
(d) Administrative Services		Belt Drive, Moncks Corner, SC 29461	2,141	F&G		Admin. Services staff	X			
Guard House	1984	223 North Live Oak Dr., Moncks Corner, SC29461	80	F&G	Owner	Security Guards			X	
Training Center	1996	474 Reid Hill Road, Moncks Corner, SC 29461	12,088	Training Ctr. Budget	Bldg. Owner	Land leased from Santee Cooper	X			
Records Building	2000	223 North Live Oak Dr., Moncks Corner, SC29461	2,800	F&G	Owner	Records Storage	X			
EMS Admin Bldg	2000	223 North Live Oak Dr., Moncks Corner, SC29461	2,800	F&G	Owner	EMS Administrative staff	X			
Animal Shelter	1993	500 Cypress Gardens Rd.	6,000	F&G	Owner		X			
Home Telephone		Complete Bldg renovation in 2004/2005	312	Home Telephone		Leases 312 Sq. ft. for Sub Station				
Berkeley Admin. Bldg.	1981/2005	1003 Highway 52, Moncks Corner, SC 29461	71,604	F&G	Owner	Berkeley County offices	X			
Suite A			4000			County Supervisor Suite	X			
Suite B			2100			Finance Dept.	X			
Suite C			3325			Human Resources Dept.	X			
Suite D			1000			Legal Dept.	X			
Suite E			1891			Del. Tax Collector Dept.	X			
Suite F			5920			Planning, Permits, B&C, Animal Control	X			
Suite G			1980			GIS, 911 Addressing	X			
Suite H			4326			Real Property Services Dept.	X			
Suite J			2500			Auditor Dept.	X			
Suite K			6144			Clerk to Council, Assembly Room	X			
Suite L			1170			County Engineer Office, Conference Rm.	X			

Engineering			1574			Deputy County Eng. Engineer employees	X		
Suite M			5800			Information Technology Dept. Server Rm.	X		
Suite N			2430			Treasurer Dept.	X		
Suite P			7400			Register Of Deeds	X		
Food Lion	1981	Hwy 52 & 52 Bypass, Moncks Corner, SC 29461	31,569	F&G	Owner	<i>Unoccupied</i>			
Nesbitt Hse/Chamber of Commerce	1800's	1004 Old Hwy 52, Moncks Corner, SC 29461	2,470	Chamber of Comm.	Owner	Chamber of Commerce			X
Moncks Corner Health Dept.	1932/1999	109 West Main St, Moncks Corner, SC 29461	28,832	Health Dept.	Owner	See (a) thru (e)			
(a) Health Dept. employees		Complete Bldg renovated in 1999	17,325			Dept.of Health & Human Services		X	
(b) Berkeley County D.J.J.			2320			Dept. of DJJ		X	
(d) Probation & Parole			1,710			Probation & Parole staff		X	
Court House Annex	1991	300-B California Ave, Moncks Corner, SC 29461	29,548	F&G	Owner	See (a) thru (e)			
(a) Clerk of Court			24,202			Clerk of Court/Family Court staff		X	
(b) Solicitor			2,946			Solicitor's staff		X	
(c) Master-in-Equity			526			Master-in-Equity staff		X	
(d) Probate Court			1,872			Probate Judge & staff		X	
Old Court House	1896/1966	300 California Ave, Moncks Corner, SC 29461	15,936	F&G	Owner	See (a) thru (d)			
(a) Sheriff		Added on to in 1966 and renovated	1,000			Sheriff's staff		X	
(b) Clerk of Court		Windows, soffit & trim upgraded 2002/03	11,000			Clerk of Court/Family Court staff		X	
(c) Probation & Parole		Roof Replacement 2002/03	1,120			Probation & Parole staff		X	
(d) I.T.			500			I.T. staff		X	
(e) Coroner Office			900			Coroner & staff		X	
(f) PTI Solicitor			1200			Pre-Trial Interv. Staff- Solicitor		X	
Hill Finklea Detention Center	1994/2008	300 California Ave, Moncks Corner, SC 29461	73,408	F&G	Owner	Detention staff Addition in 2008/09		X	
Jail Storage Buildings		300 California Ave, Moncks Corner, SC 29461	528	F&G	Owner	Storage in use			1- pond
Narcotic's Trailer Office		182 Dog Pound Road, Moncks Corner, SC 29461	2,220	F&G	Owner	Sheriff Staff		X	
Narcotic's Trailer Storage Bldg			1,116	F&G	Owner	Storage in use		X	
Forensics' Building	2000	300 California Ave, Moncks Corner, SC 29461	1,200	F&G	Owner	Sheriff Staff		X	
Morgue Building	1989/2007	223 North Live Oak Dr., Moncks Corner, SC29461	1,260	F&G	Owner	Coroner & staff		X	
Morgue itself			700						
Storage			560			Storage			
Airport/Terminal Building	2005	616 Whitesville Rd, Moncks Corner, SC 29461	2,625	F&G	Owner	Airport staff		X	4 -ponds & 1-Stormceptor
Shade Hangar Bldg #1			11,507	F&G	Owner				
Shade Hangar Bldg. #2			13,209	F&G	Owner				
Shade Hangar Bldg. #3			11,507	F&G	Owner				
T-Hangar Building			15,311	F&G	Owner				
Corporate Hangar			10,000	F&G	Owner				
Maintenance Hangar			4,600	F&G	Owner/Lessor	Private Aircraft Service Business			X
Runway Light Vault			120	F&G	Owner				
Moncks Corner Senior Center	1999/2014	222 Heatley St, Moncks Corner, SC 29461	4,450	Berkeley Seniors	Owner	Senior Citizens			X
Moncks Corner Library	1981/2005	1003 Highway 52, Moncks Corner, SC 29461	15,082	Library	Owner	Library staff, also see (a)		X	
Library Admin. Building	1970's	100 Library St, Moncks Corner, SC 29461	7,873	Library	Owner	Library staff		X	
Goose Creek Library	1992	325 Old Moncks Corner Rd, Goose Creek SC	16,462	Library	Owner	Library staff		X	1-pond
Sangaree Library	2006	595 Sangaree Parkway, Summerville, SC 29483	6,510	Library	Owner	Library staff		X	
Daniel's Island Library	2007	2301 Daniels Island Dr, Charleston, SC 29492	6,690	Library	Owner	Library staff		X	
Hanahan Library	2013	1216 Old Murray Ct. Hanahan SC	7,000	Library	Owner	Library staff		X	2-ponds
Cainhoy Community Center	early-80's	2442 Cainhoy Rd, Cainhoy SC	2,000	F&G	Owner	Community Use			X
Building A			3,450						
Building B			2,988						
(a) Goose Creek Magistrate			8,148			Magistrate staff		X	
(b) Auditor			3,104			Auditor staff Not occupied		X	
(c) Treasurer			Inc. in Above			Treasurer staff Not Occupied		X	
(d) Veteran Affairs			Inc. in Above			Veteran Affairs staff		X	
Goose Creek Health Dept.	1985	106 West View Drive, Goose Creek, SC	6,000		Owner	Health Dept staff		X	

Cypress Gardens		3030 Cypress Gardens Road, Goose Creek SC	31,692	Cypress Gardens	Owner	Cypress Garden's staff/open to Public	X			1-backflow outfall structure
Gift shop/Interpretive Ctr/Offices			2,660							
Nature Center			1,442							
Environmental Classroom			800							
Butterfly House			3,285							
Aquarium			4,900							
History Center			2,993							
Dean Hall			7,000							
Conference Cottage			780							
Double Gazebos			1,152							
Restrooms (2)			578							
Maint. Office/Supply Storage Bldg.			276							
Maintenance Shop			589							
Maintenance Tool Shed			200							
Horticulture Supply Shed			544							
Green House			2,660							
Storage Containers (3)			320							
Horticulture Trailer			320							
Gift Shop Storage Trailer			552							
MT. Holly Commerce Park	1999	Jim Rozier Blvd, Hwy 52, Moncks Corner, SC		Economic Develop.		Industrial Park				5-ponds
Sangaree Sheriff's Sub Station	N/A	345 Sangaree Parkway	600	F&G	Agreement BCWS	Sheriff's Deputies	X			
Goose Creek Senior Center	1995/2005	103 Thurgood Rd. Goose Creek, S.C.	6,250	G.C. Rec. Comm	Owner	Berkeley Seniors Inc./G.C. Rec Comm.			X	
Medic 1 - Goose Creek	N/A	907 Redbank Rd, Goose Creek SC		Goose Creek Fire Dept.	Agreement	EMS/Goose Creek Fire Dept.	X		X	
Medic 2 - Summerville	2001	137 Farmington Rd, Summerville, SC	1,500	F&G	Owner	EMS	X			1-bioretenion swale
Medic 3 - Moncks Corner	2002	223 North Live Oak Dr., Moncks Corner, SC29461	2,800	F&G	Owner	EMS	X			
Medic 4 - Cross	N/A	1659 Old Hwy 6 Cross SC 29436	2090	F&G	Owner	EMS/Sheriff Sub-station	X			
Medic 5 - St. Stephens	1999	336 Ravenell Dr, St. Stephens, SC	1,500	F&G	Owner	EMS	X			
Medic 6 - Jamestown	N/A	1052 Bee Drive, Jamestown, SC	1,200	F&G	Owner Oct. 2014	EMS	X			
Medic 7 - Cainhoy	1999	1501 Recreation Road, Cainhoy SC	3,600	F&G	Owner	EMS	X			
Medic 8 - Daniel's Island	N/A	235 Seven Farms Dr, Charleston, SC			Agreement	EMS/City of Chas. Fire Dept.	X		X	
Medic 9 - Goose Creek City	N/A				Agreement	Ambulance only - City of Goose Creek			X	
Medic 10 - Highway 176	2003	2355 State Rd, Summerville, SC	2,214	F&G	Owner	EMS	X			
Communications Towers:	N/A					911-Communication Radio Equipment				
Cainhoy Tower Building		2167 Cainhoy Rd. Cainhoy, SC BCWS	48			Communication Equipment				
Sandridge Tower Building		4594 State Rd. Ridgeville, SC	48			Communication Equipment				
Hwy 17A & 45 Tower Building		3659 N. Hwy 17A Jamestown, SC	48			Communication Equipment				
Hwy 27 Tower Building		1516 Old Gilliard Rd. Ridgeville/ Not in use	48			Communication Equipment				
Hwy 52 Tower Building		441 Drive In Lane Walmart Site	48			Communication Equipment				
Hwy 41 Tower Building		4796 HWY 41 BEC Huger Site	48			Communication Equipment				
Landfill Tower Building		555 Oakley Rd. Moncks Corner, SC	200	Communications	Owner	Communication Equipment				
Cross Tower Building		1338 Ranger Dr.- BCWS Water Tower	48			Communication Equipment				
Shulerville Tower Building		2115 Sulerville Rd. Jamestown, SC	48			Communication Equipment				
Russellville Site		138 Broadcast Lane- RCC Tower				Communication Equipment				
BC Central Communications		223 North Live Oak Dr.		F&G	Owner	Communication Equipment				
New Hope Site		1046 Jedburg Rd. Summerville, SC			Owner	Communication Equipment				
RCC Shop GC		102 Farm Rd. GC				Communication Equipment				
Goose Creek Site		Water Tower Rd. G.C.				Communication Equipment				
Live Oak Tower Site		223 North Live Oak Dr.	200	F&G		Communication Equipment				
Cordesville Tower Site		411 Zee Lane Cordesville, SC	48	Dispatch pays %		Communication Equipment				
M.C. Fairgrounds Property		327 Rembert C. Dennis Boulevard		16.07 Acres	Owner					
Berkeley Business Center Detention Pond		Bankton Circle, Hanahan, SC		4.39 Acres	Agreement	Berkeley Business Center			X	1-pond

List of City of Goose Creek Government Owned Property

Description of Services

Light Green = Building & Grounds Maintenance

Yellow = Building Maintenance only

Green = Grounds Maintenance Only

Blue = SW BMP On-site/BMP Type/BMP Maintenance when necessary

Orange = no maintenance performed

Facility Occupied By----- C=City
S=State
O=Other

City of Goose Creek Facilities	Year Built	Address	Approx. Area	City of Goose Creek is the:	Occupied By:	C	S	O	BMP Type
Fire Station II	2002	950 Crowfield Boulevard	5,000 Sqft	owner	Fire & Safety Staff	X			1-pond
Berkeley Seniors Center	1996/2005	103 Thurgood Road	6,528 Sqft	Agreement W/ Berkeley County	Citizens			X	
Municipal Complex - Offices, Administration, Court, Police, IT	1999	519 N Goose Creek Boulevard	32,720 Sqft	owner	Municipal Staff	X			
Goose Creek Community Center- Gym	2005/2017	519 N Goose Creek Boulevard	37,000 Sqft	owner	Gym Staff	X			1-pond
Felkel Field - Baseball / Softball / Concession / Playground / Restrooms / Equipment Maintenance TMS# 2351308017	1989/1992 /1993	101 Lucy Drive	14,708 Sqft.	owner	Maintenance staff	X			1-pond
Crowfield Golf and Country Club- Golf Course / Clubhouse / Pool / Tennis Courts / Golf Cart Maintenance	1989	301 Hamlet Circle	180.44 Acres	owner	Golf Course Staff				11-ponds
Fire Station I	Unknown	101 Button Hall Avenue	6,000 Sqft.	owner	Fire & Safety Staff	X			
Department of Public Works- Water / Sanitation / Maintenance / Garage / Vehicle & Equipment Maintenance	1991	200 Button Hall Avenue	unknown	owner	Public Works Staff	X			1-pond
Casey Community Center- Meeting Facility / Basketball (Eubanks Park)	Unknown	147 Old Moncks Corner Road	14,750 Sqft bldg. 9.38 Acres	owner	unoccupied				
Dennis Park - Baseball / Softball / Picnic / Playground	1992	351 Anita Drive	4 Acres	owner	unoccupied				
Dogwood Park - Picnic / Football / Grill / Playground / Soccer	unknown	460 Liberty Hall Road	1,728 Sqft bldg 15.5 Acres	owner	unoccupied				
Etling Park - Basketball / Picnic / Playground	unknown	100 Ellen Street	unknown	owner	unoccupied				
Eubanks Park - Basketball / Picnic / Grill / Playground / Volleyball / Tennis	See Casey Community Center	Old Moncks Corner Road	See Casey Community Center	See Casey Community Center	See Casey Community Center				
Fairfax Park - Grill / Picnic / Playground	Unknown	13 Waterford Place	unknown	owner	unoccupied				
Forest Lawn Park - Grill / Picnic / Playground	Unknown	181 Giles Drive	unknown	owner	unoccupied				
Foster Creek Park - Concession / Picnic / Playground / Soccer	2008	224 Foster Creek Road	34.14 Acres	owner	unoccupied				
Lake Greenview Park - Picnic / Grill / Picnic / Playground / Trails	Unknown	1 East Pandora Drive	unknown	owner	unoccupied				

Oak Creek Park Picnic / Grill / Playground	Unknown	100 Persimmon Circle	unknown	owner	unoccupied				
Ryan Creek Park - Benches / Playground	Unknown	Janice Street	unknown	owner	unoccupied				
Shannon Park - Picnic / Playground	unknown	101 Old Moncks Corner Road	unknown	owner	unoccupied				
Fire Station HQ & Meeting Facility	2016	201 Button Hall Avenue	34,525 Sqft bldg. 9.16 Acres	owner	Fire & Safety Staff	X			1-pond & 1-Bioswale
Fire Station III	2015	535 Old Mount Holly Road	10,000 Sqft bldg 3.9 Acres	owner	Fire & Safety Staff	X			2-ponds
St. James III Park - Picnic / Grill / Playground	Unknown	1084 Willowood Avenue	2.79 Acres	owner	unoccupied				
St. James Park - Picnic / Playground / Tennis	Unknown	188 Westminster Boulevard	unknown	owner	unoccupied				
Santee Cooper/Goose Creek Water Tower	Unknown	634 Saint James Avenue	unknown	owner	unoccupied				
TMS# 235-00-00-037 - Municipal Complex Park/Walking Trails	Unknown	No site address/ Adjoining 519 N Goose Creek Blvd	unknown	owner	unoccupied				2-ponds

List of City of Hanahan Government Owned Property

Description of Services

Light Green = Building & Grounds Maintenance

Yellow = Building Maintenance only

Green = Grounds Maintenance Only

Blue = SW BMP On-site/BMP Type/BMP Maintenance when necessary

Orange = no maintenance performed

Facility Occupied By----- C=City
S=State
O=Other

City of Hanahan Facilities	Year Built	Address	Approx. Area	City of Hanahan is the:	Occupied By:	C	S	O	BMP Type
2511200098 - Vacant Parcel		NO SITE ADDRESS		Owner	unoccupied				
2521303035- Park Adjoining Goose Creek Reservoir		NO SITE ADDRESS - End of VENICE AVENUE	1 Acre	Owner	unoccupied				
2590000059- City of Hanahan Recs & Parks Grounds		3000 RAILROAD AVE.	24.14 Acres	Owner					
2590000065 - Tennis Court & Recycling		S. BASILICA AVE.	2.5 Acres	Owner	unoccupied				
2590000087- Fire Station 2	1994	1200 S. BASILICA AVE.	4,355 sqft	Owner	Fire & Safety	X			1-pond
2590000092- City of Hanahan Recs & Parks Grounds & Bettis Boat Landing		BETTIS BOAT LANDING RD.	11.26 Acres	Owner	unoccupied				
2590000093- City of Hanahan Recs & Parks Bldg, Senior Center, & Amphitheater	2005	3100 & 3102 MABELINE RD.	27,415 sqft	Owner	Recreation Dept. Staff & Public	X		X	1-pond
2590000105- Fire Station #3 & Public Works Department	Fire Dept-2008 & Public Works 2015	1101 WILLIAMS LN.	14,316 Sqft	Owner	Fire & Safety and Public Works Staff	X			1-pond
2590000149- Vacant Parcel		NO SITE ADDRESS/EAGLE LANDING	5.13 Acres	Owner	unoccupied				2-ponds
2650200026- Vacant Parcel		NO SITE ADDRESS		Owner	unoccupied				
2650702053- Vacant Parcel		NO SITE ADDRESS		Owner	unoccupied				
2650803058 - Old Public Works Facility		5920 STEWARD ST.		Owner	unoccupied				
2650804016 - Old Public Works Facility		5920 STEWARD ST.	5,400 sqft	Owner	Public Works Staff	X			
2651000062 - Vacant Parcel		NO SITE ADDRESS		Owner	unoccupied				
2651201020 - Vacant Parcel		NO SITE ADDRESS		Owner	unoccupied				
2651208001 - Vacant Parcel/ SW Drainage		NO SITE ADDRESS		Owner	unoccupied				
2651208021 - Vacant Parcel/ SW Drainage		NO SITE ADDRESS	3.88 Acres	Owner	unoccupied				
2651503060- City of Hanahan Gym Parking		5821 & 5823 ROBINSON ST.		Owner	unoccupied				
2651602055 - Rhodes Pond/Park		NO SITE ADDRESS	3.18 Acres	Owner	unoccupied				
2651503059 - Municipal Complex, Fire Station #1, and Gym		5826 CAMPBELL ST	10,444 sqft	Owner	Municipal Staff, Fire & Safety, Gym Staff	X			
		1265 YEAMANS HALL RD	19,496			X			
		1255 YEAMANS HALL RD				X			
2590000150- Vacant Parcel		NO SITE ADDRESS/EAGLE LANDING	1.54 Acres	Owner	unoccupied				1-pond
2590000104- Bowens Corner Elem. School		1173 WILLIAMS LN.	21.44 Acres	Agreement	Berkeley County School Dist.			X	
2660503071- Effluent Pump Station		Corner of EAST LAKESIDE DRIVE & WEST LAKE SIDE DRIVE		Agreement	unoccupied				
2590000117 - Vacant Parcel		WILLIAMS LN.	21.31 Acres	Owner	unoccupied				
2651205030- Park		Corner of YEAMANS HALL RD. & PARK RD.		Owner	unoccupied				

Appendix B
Prioritization Matrix for Catch Basins in Public Systems

<u>Rating (A, B, or C)</u>	<u>Discription of Rating</u>	<u>Criteria for Rating</u>	<u>Number of Suggested Scheduled Cleanings</u>
0	No Need for Maintenance	Outside the MS4 or Maintained by Another Entity	0
C	Very Low to no Need for Maintenance	<ul style="list-style-type: none"> •No Residences Directly Impacted •Pipe/Basin are not Connected to an Outfall Location •1 Pipe/Basin Requiring Maintenance 	Less than A & B
C	Low to Minor Need for Maintenance	<ul style="list-style-type: none"> •1 Residence Impacted •Pipe/Basin are in an Upstream Location to an Outfall •1-2Pipe/Basin Requiring Maintenance 	Less than A & B
B	Moderate to Significant Need for Maintenance	<ul style="list-style-type: none"> •1-2 Residence Impacted •Pipe/Basin are Directly Adjacent an Outfall •2-4 Pipe/Basin Requiring Maintenance 	Once every two years
B	High Need for Maintenance	<ul style="list-style-type: none"> •2-5 Residence Impacted •Pipe/Basin are Directly Adjoining an Outfall •4-5 Pipe/Basin Requiring Maintenance 	Once every two years
A	Very High Need for Maintenance	<ul style="list-style-type: none"> •5 or more Residence Impacted • Pipe/Basin is the Outfall •5 or more Pipe/Basin Requiring Maintenance 	Once annually

Appendix C
Spill Prevention and Response Plan



BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM

212 Oakley Plantation Drive
Moncks Corner, SC 29461-5036
843.719.2697 843.723.3800 843.412.7313
843.719.4695 fax

SPILL PREVENTION & RESPONSE PLAN

Spill Prevention & Response Plan For

(enter facility name and address)

Berkeley County Stormwater Management recommends our fleet maintenance, facilities fueling, vehicle washing, and vehicle storage areas and operations develop and implement a spill prevention and response plan that includes an employee training component and has the ultimate goal of preventing or reducing pollutant runoff from our municipally controlled and operated facilities, and to promote good housekeeping practices within each facility. Even with the best preventative efforts in place, spills may still occur. When spills do occur, it is up to facility personnel to respond quickly and effectively to clean-up any spilled material or notify someone who can. This Spill Prevention and Response Plan is designed as a template for Fleet Maintenance facilities and fueling operations to develop site-specific individual Spill Prevention and Response Plans. The plan should be kept in a central location that is easily accessible for employees and updated as site-specific operations change.

INSTRUCTIONS

Each facility can use this template by filling in the blanks and completing the attached:

- _____ Spills that require Special Cleanup
- _____ Materials Inventory
- _____ Maximum Cleanup Amounts
- _____ Facility Map
- _____ Spill Kit Inventory and associated labeling
- _____ Employee Training Log

Once completed, this Plan becomes the facility's individual Plan and must be properly implemented and maintained. The finished Plan should be reviewed and updated at least annually and or as site specific changes occur.

Plan Implementation Date: _____

Plan Revision Date(s): _____



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SPILL PREVENTION & RESPONSE PLAN

Facility's Responsible Person(s) in charge of spill response planning, implementation and maintenance of the Plan:

Name

Phone #

RESPONSIBILITIES

- Each "**Facility Responsible Person**" has the primary responsibility for coordinating the response to emergencies, this will include hazardous material spills.
- All **Supervisors** should ensure that their respective employees are familiar with these spill prevention and response procedures and receive the necessary training deemed appropriate for their role in spill prevention and spill response.
- **All employees** should follow these procedures in the event of a chemical spill.

EMERGENCY CONTACT NUMBERS

The following telephone numbers should be posted near telephones and any other obvious locations near high potential spill locations:

- Outside emergency services (police, fire department, ambulance service): 911
- National Response Center: 800-424-8802
- South Carolina Department of Health and Environmental Control: 1-888-481-0125
- South Carolina Emergency Management Division: 803-737-8500
- Berkeley County Emergency Preparedness: 843-719-4166
 - Safety Department: (if applicable): _____

CLEAN-UP PROCEDURES

Spilled hazardous materials should be quickly contained and effectively cleaned up. Employees should clean up spills themselves, **only if properly trained and protected**. Employees who are NOT trained in spill cleanup procedures should immediately report the spill to the Responsible Person(s) listed above, warn other employees in the area, and leave the area as soon as possible and if necessary.



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SPILL PREVENTION & RESPONSE PLAN

The Maximum Cleanup Amounts that properly trained employees can cleanup **are listed on pages 8**. In the event of spills greater than the amounts listed on pages 8, contact the aforementioned appropriate responders listed in the Emergency Contact Numbers.

Berkeley County Stormwater recommends that the following generalized guidelines should be followed for evacuation of areas where hazardous material spills have occurred, spill control and containment, notification of proper authorities, and general emergency response procedures in the event of a spill incident in which there is potential for a significant release of hazardous materials:

1. Evacuation

Personnel in the immediate vicinity of a spill should *immediately evacuate* the premises (except for employees with training in spill response for specific circumstances described below) if the material poses an immediate health hazard. If the spill is of “medium” or “large” size, or if the spill seems hazardous, immediately notify emergency response personnel.

2. Spill Control Techniques

Once a spill has occurred, the properly trained personnel needs to decide whether the spill is small enough to handle without outside assistance. Only employees with training in spill response should attempt to contain or clean up a spill.

NOTE: If you are properly trained for cleaning up a spill yourself, make sure you are aware of the hazards associated with the material spilled by referencing the on-site MSDS, make sure you have adequate ventilation, and make sure you have proper personal protective equipment on prior to initiating any cleaning activities. Treat all residual chemical and clean-up materials used throughout the course of the spill as a hazardous waste.

Spill control equipment should be located wherever significant quantities of hazardous materials are received, stored, or used. MSDSs, absorbents, over-pack container, container patch kits, spill dams, shovels, floor dry, acid/base neutralizers, and “caution-keep out” signs are common items to be utilized during a spill response.



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SPILL PREVENTION & RESPONSE PLAN

3. Spill Responses and Cleanup

Most hazardous material spills can be divided into three categories: Small, Medium and Large. Response and cleanup procedures can vary depending on the size of a spill. Using the information below, determine the extent and type of spill. If the spill is large, if there has been a release to the environment or if there is no one knowledgeable about spill clean-up available, contact the Facility Responsible Person or 911. Additionally, always refer to page 8 for the maximum clean-up amounts associated with each specific type of material.

Small Spills: Any spill where the major dimensions are less than 18 inches in diameter. Small spills are generally handled by properly trained internal personnel and usually do not require an emergency response by police or fire department HAZMAT teams.

- Quickly control the spill by stopping or securing the spill source.
This could be as simple as up righting a container and using floor-dry or absorbent pads to soak up the spilled material. Be sure to wear gloves and protective clothing if necessary.
- Put spill material and absorbents in secure containers if any are available.
- Consult the Facility Responsible Person and the MSDS for the spill and waste disposal procedures.
- In most instances, the area of the spill should **NOT** be washed with water. Use Dry Cleanup Methods and **never** wash spills down the drain, onto a storm drain or onto the driveway or parking lot.
- Both the spilled material and the absorbent may be considered hazardous waste and must be disposed of in compliance with state and federal environmental regulations.

Medium Spills: Spills where the majority of the dimensions exceed 18 inches, but are less than 6 feet. Outside emergency response personnel



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SPILL PREVENTION & RESPONSE PLAN

(police and fire department HAZMAT teams) may need to be called for medium sized spills. However, common sense and a certain degree of caution should dictate when it is necessary to call them.

- Immediately attempt to contain the spill at its original source by simple measures. Simple measures consist of quickly up-righting a container, or putting a lid on a container, if possible. Only use absorbents if they are immediately available. If you have made an attempt to contain the spill, and you have quickly determined you cannot take any short-term containment measures, leave the area and alert Emergency Responders. Closing doors behind you while leaving will help contain the fumes occurring from the spill(s). Give Emergency Responders accurate enough information that they are aware of the exact location, chemical, and estimated amount of the spill.
- Immediately assess the area surrounding the spill. Engines and electrical equipment near the spill area need to be turned off. This will minimize potential sources of ignition in the area. If engines and electrical sources can't be turned off prior to leaving, advise Emergency Responders of such. Furthermore, advise them on how to turn off engines or electrical sources. Do not attempt to go back into the area of the spill once you have left. Assist emergency responders by helping them determine where and how to shut off heating, air conditioning equipment, or air circulating equipment, if necessary.
- Be sure to follow all Emergency Responder instructions.
- Be prepared to assist Emergency Responders with any other information that may be necessary, such as MSDSs, questions about the facility, and appropriate Berkeley County personnel. Emergency Responders or trained personnel with proper personal protective equipment will then clean up the spill residue once it has been contained. Do not attempt to re-enter the area of the spill until the responder in charge says the area is acceptable for occupancy.



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SPILL PREVENTION & RESPONSE PLAN

- All appropriate reports must be filed with proper authorities. It is the responsibility of the spiller to inform both his/her supervisor and the emergency responders as to what caused the spill. The response for large spills is similar to the procedures for medium spills, except that the exposure danger is greater.

Large Spills: Any spill involving flammable liquid where the major dimension exceeds 6 feet in diameter; and or any “running” spill, where the source of the spill has not been contained or flow has not been stopped.

- Immediately leave the area of the spill and notify Emergency Responders. Give the operator the spill location, chemical name, and approximate amount.
- Attempt to get MSDS information for the spilled chemical for the Emergency Responders to use, only if the MSDS information is located in a safe area away from the spill. Furthermore, be prepared to advise responders as to any ignition sources, engines, electrical power, or air conditioning/ventilation systems that are still running. Provide responders of any absorbents, containers, or spill control equipment that may be available. This should be done in a remote area, because the evacuation should place the spiller far away from the spill. Radios or phones can be used to assist from a distance, if necessary.
- Emergency Response personnel, in accordance with their own established procedures, should be the only personnel that handle any spills greater than 6 feet in any dimension or that are continuous or running. Once the Emergency Responders or HAZMAT team are on-site cleaning up spills and or putting out fires, the entire area will be under their control and no one may reenter the area until the responder in charge says the area is acceptable for occupancy.
- Provide information for reports to supervisors and responders, just as indicted in the medium spills.



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SPILL PREVENTION & RESPONSE PLAN

REPORTING SPILLS

All hazardous material spills, regardless of their size, should be reported immediately to the **Facility Responsible Person**. It will be the responsibility of the Facility Responsible Person to determine if the spill has the potential for any environmental impacts outside of the facility and those that must be reported to 911, the National Response Center at 800-424-8802, the South Carolina Department of Health and Environmental Control at 1-888-481-0125, the South Carolina Emergency Management Division at 803-737-8500, and the Berkeley County Emergency Preparedness at 843-719-4166.

South Carolina Law requires reports of spills & releases that may impact the environment. Do not delay reporting! Calling a local DHEC office DOES NOT COUNT legally as reporting a spill. You must call the 24-hour SCDHEC Emergency Response number at 1-888-481-0125.

SPILLED MATERIALS THAT REQUIRE SPECIAL CLEANUP

Describe any material used in your facility that requires special materials and procedures for cleanup beyond those listed above. Provide details regarding hazards associated with these.

Material

Hazards

MATERIAL INVENTORY

List all materials or waste that may require clean up. List the average and maximum amounts on site and their storage locations. *(Ignore any that do not apply and add other materials of concern that are onsite. Use additional sheets if necessary).*

<u>Material</u>	<u>Amount (avg./max)</u>	<u>Location(s)</u>
Antifreeze	_____	_____
Used Oil	_____	_____
Motor Oil	_____	_____
Degreaser	_____	_____
Hydraulic Oil	_____	_____
Solvents	_____	_____
Brake Cleaner	_____	_____
Diesel Fuel	_____	_____
Fuel Additive	_____	_____
Unleaded Fuel	_____	_____
Other	_____	_____

Spill Kits

- Label each spill kit prominently with the words „SPILL KIT” or “Absorbent” etc.
- Label or stencil the necessary emergency telephone number(s) or pager of the persons to be contacted in case of a spill or leak that is beyond the training and equipment available on or near each spill kit location.

Facility Responsible Person/Phone Number: _____ / () - _____

Spill Response Contractor (if any)/Phone Number: _____ / () - _____

State Emergency Release and Incident Hotline: 1-(888)-481-0125

Spill Kit Inventory

List all response equipment that will be maintained in each spill kit location (refer to MSDSs to determine recommended clean-up methods PPE and supplies):

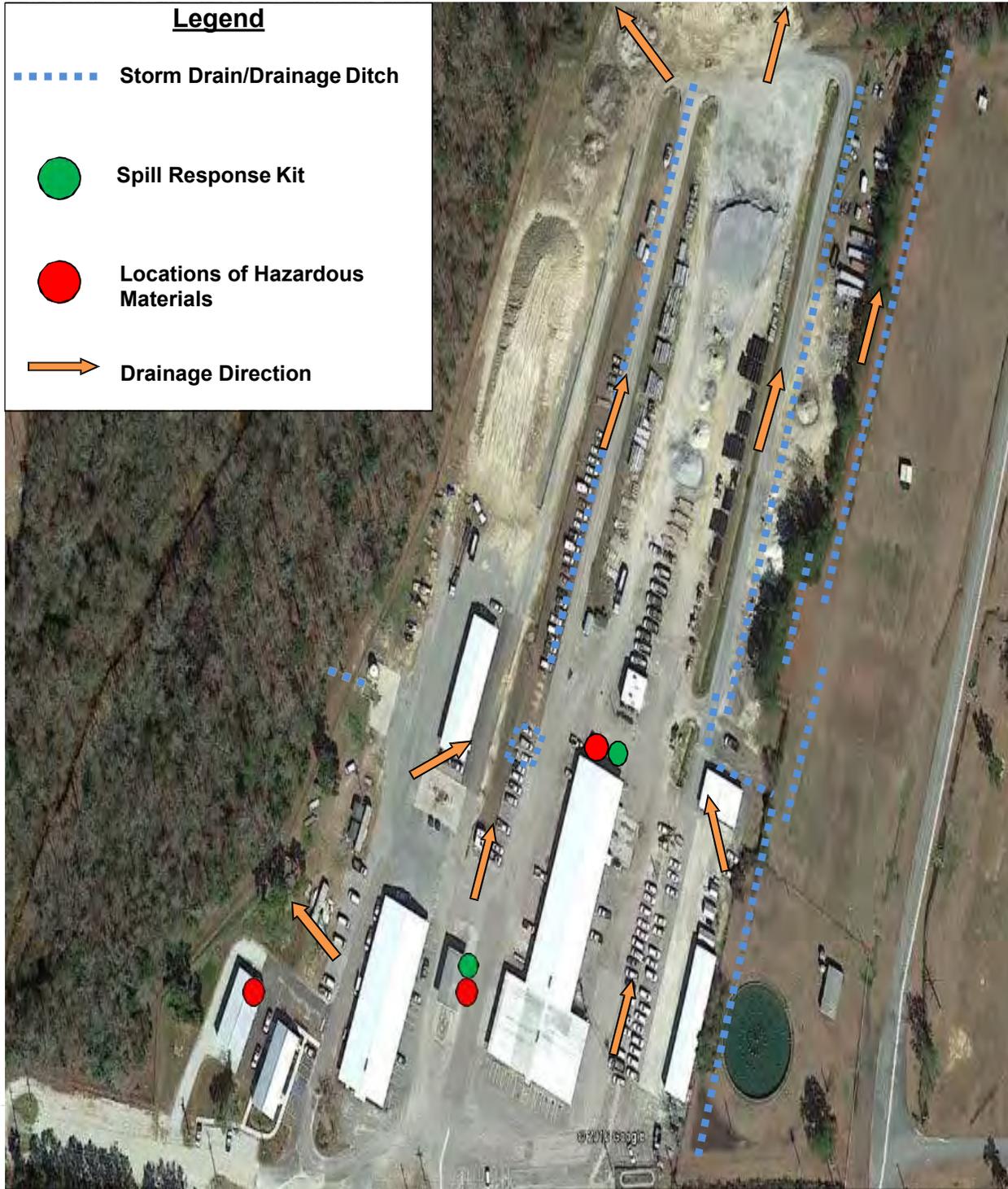
LOCATION	ABSORBENT S (bags or loose absorbent, pigs, neutralizing agent, etc.	TOOLS (shovels,, brooms, waste containers, etc.	PERSONAL PROTECTIVE EQUIPMENT (impervious gloves, goggles, aprons, boots,	OTHER SUPPLIES (warning tape, labels, markers, MSDSs, etc.)

PERSON RESPONSIBLE FOR MAINTAINING THIS INVENTORY:

FACILITY MAP

Attach a map or sketch of the facility showing:

- the locations of each spill response kit.
- the locations where the material identified on page 8 are normally stored or used.
- the location of each storm drain or drainage ditch.



Appendix D
Good Housekeeping/IDDE Training Template and Example Certificate

BERKELEY COUNTY

ENGINEERING DEPARTMENT

Thomas R. Lewis, P.E., County Engineer

212 Oakley Plantation Drive

Moncks Corner, SC 29461

AGENDA

Event: Illicit Discharge Detection and Elimination Training – Good Housekeeping Training

Date:

Time:

Location: Assembly Room, 1003 US-52, Moncks Corner, SC 29461

Attendees: Stormwater Management Program:

Roads & Bridges:

Maintenance Garage:

Fleet Management:

City of Hanahan:

8:00am – 8:45am	Introduction & Program Descriptions <ul style="list-style-type: none">I. Sign-in.II. SWMP introduction and program description.III. Introduction of attendees and a description of daily activities as it relates to stormwater.
8:45am – 10:15am	Good Housekeeping <ul style="list-style-type: none">I. A presentation about good housekeeping practices.II. A few short videos about good housekeeping practices.III. Question and answer session.IV. A short quiz to be taken about the material just covered.
10:15am – 10:30am	Break
10:30am – 12:00pm	Illicit Discharge Detection and Elimination <ul style="list-style-type: none">I. A presentation about how to detect illicit discharges and how to report.II. A few short videos about illicit discharges and how to detect them.III. Question and answer session.IV. A short quiz to be taken about materials just covered.
12:00pm	Adjourn

CERTIFICATE OF ATTENDANCE

BERKELEY COUNTY

in cooperation with
Berkeley County Stormwater Management Program

This certifies that

XXXXXXXX

BERKELEY COUNTY (DEPARTMENT)

Attended the *Stormwater Employee Training for
Illicit Discharge Detection & Elimination – Good Housekeeping Workshop*
MM/DD/YYYY



Kelsey Gagnon

Instructor: Kelsey Gagnon
Berkeley County Stormwater Management Program



Annual Report Appendix B: Water Quality Monitoring Data

N/A – Berkeley County, City of Goose Creek and City of Hanahan
are not conducting water quality monitoring

Annual Report Appendix C: Revised/Updated Monitoring and Assessment Plan

City of Goose Creek and City of Hanahan
(N/A – Berkeley County)

City of Goose Creek 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 Goose Creek 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 Goose Creek 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
 - (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.

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.

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- 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.

Annual Report Appendix D: Implementation Schedule

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

Annual Report Appendix E: Consortium Annual Reports

**Ashley Cooper Stormwater Education Consortium (ACSEC)
Table of Completed Activities, 2016-2017**

*For detailed information on these activities, please review the ACSEC Annual Report of Activities for Year 8 (2016) and Year 9 (2017), available at www.ashleycooper.org.

MASS MEDIA

Date of Activity	Activity Description	Estimated Impacts	MCM
2016	WEBSITE: Carolina Clear, ACSEC, Clemson Extension Stormwater Pond Management Website, Carolina Yards, and Carolina Rain Garden Initiative, page views	56,088	1
2016	ELECTRONIC NEWSLETTER: <i>The Ripple Effect</i>	2,646	1
2016	SOCIAL MEDIA: ACSEC Facebook page	42,424	1
2016	TELEVISION: SCETC and Clemson Extension's "Making It Grow;" weekly water resource highlight	12,718	1
Spring/Fall 2016	TELEVISION: Stormwater Pond Commercial; Comcast, Fox24, Viamedia	623,909	1
10/20/16	TELEVISION: News segment on stormwater pond management	178,766	1
2016	TELEVISION: "Street Interview" series on dog waste disposal	178,766	1
5/6/16	NEWSPAPER: "Follow rain barrel guidelines for successful home project" in <i>The Post and Courier</i>	96,005	1
9/30/16	NEWSPAPER: "Shorescaping the edges of a pond get your green thumb wet" in <i>The Post and Courier</i>	96,005	1
12/18/16	NEWSPAPER: "Leave the leaves" in <i>The Post and Courier</i>	96,005	1
Winter 2016	MAGAZINE: "New extension programs promotes rain gardens to combat floods, erosion, and stormwater runoff" in <i>Clemson Impacts</i>	16,140	1
6/1/16	PRINT ADVERTISEMENT: "Scoop It, Bag It, Can It" promotional piece by the Town of Mount Pleasant in <i>The Moultrie News</i>	70,607	1
6/8/16	PRINT ADVERTISEMENT: "It Drains Here" promotional piece by the Town of Mount Pleasant in <i>The Moultrie News</i>	70,607	1
6/8/16	PRINT ADVERTISEMENT: "Illicit Discharge" promotional piece by the Town of Mount Pleasant in <i>The Moultrie News</i>	70,607	1
6/22/16	PRINT ADVERTISEMENT: "Don't Pitch in the Ditch" promotional piece by the Town of Mount Pleasant in <i>The Moultrie News</i>	70,607	1

6/29/16	PRINT ADVERTISEMENT: "Stormwater Pond" promotional piece by the Town of Mount Pleasant in The Moultrie News	70,607	1
9/1/16	DIRECT MAIL: "Save the Date" 2016 Stormwater Pond Management Conference postcard	9,495	1
2017	BILLBOARD: Healthy landscapes, healthy ponds billboards were located in high-visibility in 2017	335,106	1
2017	ONLINE NEWSLETTER: ACSEC's "Ripple Effect" is published bi-monthly and provided ACSEC education and involvement opportunities.	2,768	1
2017	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.	22,162	1
April-May, 2017	TELEVISION: ACSEC Street Interview Series focused on picking up pet waste	178,766	1
5/2/17	TELEVISION: News segment highlighting the ACSEC rain barrel sale	178,766	1
2017	WEBSITE: Total unique views in 2017 for the Carolina Clear, ACSEC, Stormwater Pond Management and Carolina Yards.	53,813	1
2017	WEBSITE: Total views for the ACSEC Facebook page in 2017.	215,668	1
Spring 2017	ARTICLE: "Rain Gardening in the Home Landscape" featured in Naturally Kiawah spring 2017 edition	6,636	1
2/19/17	ARTICLE: "Pond Sense" article in the Post & Courier.	219,000	1
Summer 2017	ARTICLE: "Clemson Extension offers planter boxes to soak up urban runoff" in Clemson Impacts Magazine	16,140	1
10/1/17	ARTICLE: "Green Your Landscape with Rain Gardens" featured in the October edition of SC Living Magazine.	584,000	1
10/15/17	ARTICLE: "Flocking to Native Plants" featured in Post & Courier	219,000	1
Winter/Spring 2017	DIRECT MAIL: "Healthy Soils Are Full of Life" mailed to students in 100 Charleston County Public School Systems	45,000	1
OUTREACH MATERIALS			
Date of Activity	Activity Description	Estimated Impacts	MCM
2016	MANUAL: The Carolina Yards Workbook provides information on environmentally friendly gardening practices to residential audiences.	150	1
2016	MANUAL: "Low Impact Development in Coastal South Carolina: A Planning and Development Guide." produced by SC DNR, ACE BASIN NERR Coastal Training Program, SC Sea Grant Consortium, USC North Inlet-Winyah Bay NERR Coastal Training Program, NOAA NERR, and the Center for Watershed Protection	28,778	1

2016	BROCHURE: Leaf It On The Lawn; flyer includes tips for proper disposal of lawn debris and is offered in Spanish and English.	100	1
2016	MANUAL: "Rain Gardens: Green Solutions to Stormwater Pollution"	250	1
2016	MANUAL: "Rainwater Harvesting for Homeowners"	200	1
2016	MANUAL: "Guide to the Salt Marshes and Tidal Creeks of the Southeastern United States," produced by EPA, SC DNR, SC Sea Grant Consortium, SE Taxonomic Center, ACE Basin NERR, and Clemson Extension	300	1
2016	BINDER: "Stormwater Pond Maintenance Binder"	20	1
2016	POSTCARD: A More Green Way to Clean; Tips on proper pressure washing to protect water quality.	100	1
2016	POSTCARD: Better Manage Fats, Oil and Grease (FOGs); Provides information on proper FOG disposal.	100	1
2016	POSTCARD: Freshwater Shorescapes; Benefits of shorescaping and tips and resources for pond owners.	200	1
2016	POSTCARD: Septic Systems Care and Maintenance; Tips for maintaining septic systems to reduce impact on water quality.	100	1
2016	POSTCARD: Trashing Our Environment; Provides information on what can be done to prevent litter in SC.	100	1
2016	POSTCARD: We All Live Downstream; Tips to preventing stormwater pollution in communities	300	1
2016	POSTCARD: What is a Rain Barrel?; Promotes the use of rain barrels for better lawn care and water quality.	200	1
2016	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	1
2016	POSTCARD: What To Do About Pet Waste; Provides information to pet owners on proper disposal of pet waste.	300	1
2017	POSTCARD: A More Green Way to Clean; Tips on proper pressure washing to protect water quality.	100	1
2017	POSTCARD: Better Manage Fats, Oil and Grease (FOGs); Provides information on proper FOG disposal.	100	1
2017	POSTCARD: Freshwater Shorescapes; Benefits of shorescaping and tips and resources for pond owners.	200	1
2017	POSTCARD: Septic Systems Care and Maintenance; Tips for maintaining septic systems to reduce impact on water quality.	100	1
2017	POSTCARD: Trashing Our Environment; Provides information on what can be done to prevent litter in SC.	100	1

2017	POSTCARD: We All Live Downstream; Tips to preventing stormwater pollution in communities	300	1
2017	POSTCARD: What is a Rain Barrel?; Promotes the use of rain barrels for better lawn care and water quality	200	1
2017	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	1
2017	POSTCARD: What To Do About Pet Waste; Provides information to pet owners on proper disposal of pet waste.	300	1
2016	PROMOTIONAL ITEM: ACSEC Koozies distribution	100	1
2016	PROMOTIONAL ITEM: Clean Water Hero Bracelets distribution	200	1
2016	PROMOTIONAL ITEM: Dog Bag Dispenser distribution	150	1
2016	PROMOTIONAL ITEM: Pocket Ashtray distribution	75	1
2016	PROMOTIONAL ITEM: ACSEC Tattoo (Logo)	100	1
2016	PROMOTIONAL ITEM: www.ashleycooper.org sticker distribution	200	1
2016	PROMOTIONAL ITEMS: Life in the Salt Marsh, information of salt marsh ecology and ecosystem health	300	1
2016	PROMOTIONAL ITEM: Stormwater Pond Management Sticker distribution	200	1
2016	PROMOTIONAL ITEM: Native Plant Seed Packets	250	1
2016	PROMOTIONAL ITEM: Grease Can Lid	50	1
January 2016	PROMOTIONAL ITEM: Charleston Water System utility bill insert; stormwater management from the City of Charleston	102,000	1
2017	PROMOTIONAL ITEM: Life in the Salt Marsh poster	25	1
2017	PROMOTIONAL ITEM: Charleston Water Utility billing insert including information on stormwater pollution prevention	102,000	1
2017	PROMOTIONAL ITEM: "Neighborhood Tool Kit" distributed as part of online newsletter by the City of Charleston promoting ACSEC tools	1,638	1
2017	PROMOTIONAL ITEM: "Spotted! Illicit Discharge" door knob hanger	500	1
2017	PROMOTIONAL ITEM: Clean Water Hero Bracelets distribution	200	1
2017	PROMOTIONAL ITEM: Native Plant Seed Packets	500	1
2017	PROMOTIONAL ITEM: stormwater pond management stickers	200	1
2017	PROMOTIONAL ITEM: ashleycooper.org stickers	200	1
2017	PROMOTIONAL ITEM: Pocket ashtrays	75	1
2017	PROMOTIONAL ITEM: Clean Water Hero bracelets	200	1

2017	PROMOTIONAL ITEM: ACSEC temporary tattoo	100	1
2017	PROMOTIONAL ITEM: ACSEC Koozie	100	1
2017	PROMOTIONAL ITEM: Grease can lids	50	1
2017	PROMOTIONAL ITEM: Dog Bag Dispenser distribution	150	1
2017	MANUAL: The Carolina Yards Workbook provides information on environmentally friendly gardening practices to residential audiences.	35	1
2017	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	1
2017	MANUAL: The Rain Garden manual provides information on rain gardens to residential audiences	50	1
2017	MANUAL: "Guide to the Salt Marshes and Tidal Creeks of the Southeaster United States"	15	1
2017	MANUAL: The Rainwater Harvesting manual provides information on rainwater harvesting to residential audiences.	50	1
2017	MANUAL: "Low Impact Development in Coastal South Carolina: A Planning & Development Guide"	5,301	1
2017	BINDER: "Stormwater Pond Maintenance Binder" distributed to homeowners & property managers	20	1
2017	PAMPHLET: "Paint Industry Best Practices" intended for paint contractor companies	170	1

PERMANENT EXHIBITS

Date of Activity	Activity Description	Estimated Impacts	MCM
2016	PERMANENT EXHIBIT: Clemson REC "Ed Shed" includes education signage and stormwater best management practices.	500	1
2016	PERMANENT EXHIBIT: Clemson REC Urban Research and Demonstration Area includes rain garden and educational signage.	1,000	1
2016	PERMANENT EXHIBIT: City of North Charleston's Felix C Davis Community center, rain garden and rain barrel	1,000	1
2016	PERMANENT EXHIBIT: Berkeley County's Hanahan Library includes a rain garden, cistern, and educational signage; partner project with Keep Hanahan Beautiful	350	1
2016	PERMANENT EXHIBIT: Mount Pleasant's "Fire Station #2" includes a rain garden and educational signage	800	1
2016	PERMANENT EXHIBIT: Camp St. Christopher Activity Hall includes a rain garden.	650	1
2016	PERMANENT EXHIBIT: Charleston County's Public Services Campus includes a shoreline planting project and educational signage.	500	1

2016	PERMANENT EXHIBIT: Rain barrel display at Charleston Aquarium.	1,000	1
2016	PERMANENT EXHIBIT: Two rain barrels and drip irrigation at St. Julian Divine Community Center.	1,500	1
2016	PERMANENT EXHIBIT: Two rain gardens, cistern, native plants, and other best management practices at Fort Johnson Community Garden.	5,000	1
2016	PERMANENT EXHIBIT: Rain garden at Caw Caw Interpretive Center.	2,000	1
2016	PERMANENT EXHIBIT: Rain garden at "Whirlin' Waters" at Wannamaker County Park.	500	1
2016	PERMANENT EXHIBIT: College of Charleston's Political Science Building includes a cistern and pump	100	1
2016	PERMANENT EXHIBIT: College of Charleston's Early Childhood Education Center includes two rain barrels	100	1
2016	PERMANENT EXHIBIT: CREEC School has a rain barrel, rain garden, and educational signage installed.	175	1
	PERMANENT EXHIBIT: Charlestowne Montessori has two rain barrels and rain garden installed.	100	1
2016	NEW SCHOOL PERMANENT EXHIBIT: Cistern at Mitchell Elementary School's Green Hearts Project Garden.	350	1
2017	PERMANENT EXHIBIT: Clemson REC "Ed Shed" includes education signage and stormwater best management practices.	1,000	1
2017	PERMANENT EXHIBIT: Clemson REC Urban Research and Demonstration Area includes a rain garden, rain barrels, and educational signage.	1,000	1
2017	PERMANENT EXHIBIT: Rain garden and cistern installed at a Berkeley County library location in Hanahan.	1,000	1
2017	PERMANENT EXHIBIT: Rain garden and rain barrel at a North Charleston park & Keep North Charleston Beautiful office location.	1,000	1
2017	PERMANENT EXHIBIT: Rain garden and signage installed at Mount Pleasant fire station and recreation area	800	1
2017	PERMANENT EXHIBIT: Shorescaping planting and signage installed at Charleston County Government's stormwater pond.	500	1
2017	PERMANENT EXHIBIT: Rain barrel and rain garden installed at Cape Romain Environmental Education Center.	175	1
2017	PERMANENT EXHIBIT: Rain barrel and rain garden installed at Charleston Towne Montessori School	100	1
2017	PERMANENT EXHIBIT: Rain garden at "Whirlin' Waters" at Wannamaker County Park.	500	1
2017	PERMANENT EXHIBIT: Rain garden and signage at Caw Caw Interpretive Center.	2,000	1
2017	PERMANENT EXHIBIT: Two rain barrels and drip irrigation at St. Julian Divine Community Center.	1,500	1

2017	PERMANENT EXHIBIT: Two rain gardens, cistern, native plants and other best management practices at Fort Johnson Community Garden.	5,000	1
2017	PERMANENT EXHIBIT: Cistern at Mitchell Elementary School's Green Hearts Project Garden.	350	1
2017	PERMANENT EXHIBIT: Cistern at the College of Charleston's Grice Marine Lab	500	1
2017	PERMANENT EXHIBIT: Cistern at the College of Charleston's Political Science Building.	500	1
2017	PERMANENT EXHIBIT: Four rain barrels at James Island Charter High School.	390	1
2017	PERMANENT EXHIBIT: Rain barrel system at Early Childhood Education Center.	100	1
2017	PERMANENT EXHIBIT: Two rain barrels at Goodwin Elementary School.	100	1

FAIRS AND FESTIVALS

Date of Activity	Activity Description	Estimated Impacts	MCM
2016	FAIRS AND FESTIVALS: Keep Charleston Beautiful hosts tables at multiple events to raise awareness and recruit volunteers to projects	2,700	1
2/6/16	FAIRS AND FESTIVALS: "Charleston STEM Festival" booth used Enviroscope with visiting youth	10,000	1
2/12/16	FAIRS AND FESTIVALS: "SE Wildlife Expo" included participation from multiple partners including the Charleston Soil and Water Conservation District and SC DNR	1,500	1
2/19/16	FAIRS AND FESTIVALS: College of Charleston's "STEM Education Day;" enviroscope demonstration booth	1,200	1
2/24/16	FAIRS AND FESTIVALS: "Career Fair Day" at James Island Middle School	1,600	1
3/12/16	FAIRS AND FESTIVALS: Charleston County's Stormwater Division hosted a booth at "The Black Expo"	200	1
4/6/16	FAIRS AND FESTIVALS: Berkeley County's "Naturescope/Kids Who Care;" booth discussed stormwater, pollution, and impacts to the food chain.	2,250	1
4/13/16	FAIRS AND FESTIVALS: "MUSC Earth Day Festival;" multiple partners and booths present	1,500	1
4/20/16	FAIRS AND FESTIVALS: "Santee Cooper Environmental Expo"	400	1
4/23/16	FAIRS AND FESTIVALS: "Charleston County Earth Day Festival;" multiple partners and booth represented	8,000	1
05/20/16	FAIRS AND FESTIVALS: Westview Elementary Career Field Day:"	200	1

5/20/16	FAIRS AND FESTIVALS: "Oakbrook Ashley Riverfest;" SC Sea Grant Consortium and others; held at Town of Summerville property	450	1
9/17/16	FAIRS AND FESTIVALS: Tractor Supply Pet Appreciation Day: Pet waste education material to store visitors	100	1
10/27/16	FAIRS AND FESTIVALS: "STEM Fair" held at the North Charleston Convention Center"	2,242	1
2/11/17	FAIRS/FESTIVALS: ACSEC hosted a booth at Charleston STEM Festival and partnered with SC Sea Grant to provide hands-on activities with visiting youth and parents.	10,000	1
2/16/17-2/18/17	FAIRS/FESTIVALS: The Charleston Soil and Water Conservation District provided information at the Southeaster Wildlife Exposition	1,500	1
3/31/17	FAIRS/FESTIVALS: Naturescope Kids Who Care Event; ACSEC provided hands-on activities to discuss stormwater and food chains	2,000	1
4/4/17	FAIRS/FESTIVALS: Lowcountry Math & Science Fair offered by the Charleston County Soil and Water Conservation District	200	1
4/12/17	FAIRS/FESTIVALS: ACSEC hosted a booth as part of MUSC's Earth Day Festival; provided information on upcoming ACSEC education and involvement opportunities.	500	1
4/15/17	FAIRS/FESTIVALS: ACSEC hosted a table at the Charleston County Earth Day Festival	8,000	1
5/20/17	FAIRS/FESTIVALS: "Rise Above Our Flooding Streets: Art & Science Extravaganza"- information provided by ACSEC and other partners on nuisance flooding	116	1
10/21/17	FAIRS/FESTIVALS: ACSEC provided a booth and hands-on activity at the Sangaree Community Day hosted by Berkeley County	800	1
IN-PERSON, PHONE, EMAIL			
Date of Activity	Activity Description	Estimated Impacts	MCM
2016	IN-PERSON: Assistance provided to residents from CUCES agents and Master Gardener's on variety of home, garden, and water resource topics.	49,500	1
2016	SOIL SAMPLES: Soil samples processed in the Tri-County by Clemson Ag Services Lab; provides fertilizer recommendations.	4,410	1
2017	IN-PERSON: Assistance provided to residents from CUCES agents and Master Gardener's on variety of home, garden, and water resource topics.	33,869	1
2017	IN-PERSON: Soil samples proceed in cooperation with Clemson Extension and Clemson's Agricultural Services Lab. (Number reported reflective of samples collected in Berkeley, Charleston & Dorchester Counties)	5,551	1
PRESENTATIONS			

Date of Activity	Activity Description	Estimated Impacts	MCM
2016	PRESENTATIONS: Clemson Extension small presentations programs on variety of "stormwater management" topics; locations in Tri-County	250	1
2016	PRESENTATION: "Oysters as living shorelines" presentation included to program participants, as part of SC DNR's SCORE Program	56	1
2/23/16	PRESENTATION: Presentation to legislators on water quality initiatives at state level	250	1
2016	PRESENTATION: Youth-based, interactive stormwater management presentations using Enviroscope, "Stormwater Jeopardy" and other	366	1
2016	PRESENTATION: Keep Charleston Beautiful's "Clean City Clara" and "Talking Trash Program" delivered to elementary and middle school City of Charleston youth	1,959	1
2016	PRESENTATION: SC Sea Grant Consortium "Enviroscope Loan" program for teacher-sponsored program delivery to youth	143	1
4/1/16 and 12/2/16	PRESENTATION "We All Need Trees" presentation delivered by Charleston County Soil and Water Conservation District; stormwater management and other benefits	520	1
2017	PRESENTATION: topics include rain gardens, pond management & pollution prevention among many other topics provided to diverse groups in the Berkeley, Charleston & Dorchester County region. Presentations offered by Clemson Extension	795	1
2017	PRESENTATION: "Oysters as living shorelines" provided by SC DNR SC Oyster Restoration & Enhancement Program	322	1
2/21/17 and 5/23/17	PRESENTATION: Soil & Conservation Districts Legislative Dinner & Charleston Soil and Water Conservation District Environmental Recognition Program	420	1
2017	PRESENTATION: "Clean City Clara" youth education programs offered by Keep Charleston Beautiful	2,477	1
2017	PRESENTATION: Enviroscope model used with local school groups offered by SC Sea Grant Consortium & Clemson Extension	290	1
12/2/17	PRESENTATION: "Twiggy the Twig" program offered by the Charleston County Soil and Water Conservation District.	300	1
WORKSHOPS			
Date of Activity	Activity Description	Estimated Impacts	MCM
3/24/16	WORKSHOP: "Core, Category 3 and Category 5 Pesticide Applicator Training;" provided information on BMPs for pesticide use, sponsored by Clemson Extension	27	1

6/29/16	WORKSHOP: "From Seeds to Shoreline" New Teacher Workshop provided information on salt marsh ecology and stormwater management; partners include SC Sea Grant Consortium, SC DNR NERR, and Clemson Extension	12	1
6/30/16	WORKSHOP: "From Seeds to Shoreline" Returning Teacher Workshop provided information on salt marsh ecology and stormwater management; partners include SC Sea Grant Consortium, SC DNR NERR, and Clemson Extension	23	1
8/25/16	WORKSHOP: "Bacterial pollution solutions through education" ACSEC education strategy to address bacteria management, sponsored by Clemson Extension and SC DNR ACE Basin NERR CTR	12	1
9/9/16	WORKSHOP: "Communicating Climate Change Effectively" workshop on communication strategies for discussing difficult topics; sponsored by SC DNR ACE Basin NERR	27	1
9/13/16	WORKSHOP: "2016 Local Work Group Meeting" hosted by NRCS and the Charleston County Soil and Water Conservation District; discussed best practices for conservation and land and water management	36	1
11/21/16	WORKSHOP: "Rain Gardens for the Home Landscape;" residential setting; sponsored by Clemson Extension and Berkeley County	20	1&2
2/16/17	WORKSHOP: "Silt Fence and Beyond: Erosion and Sediment Controls Best Practice" offered by Clemson Extension	65	1
8/2/17	WORKSHOP: "From Seeds to Shoreline" New Teacher Workshop offered by SC SeaGrant Consortium, SCDNR & Clemson Extension	11	1
8/3/17	WORKSHOP: "From Seeds to Shoreline" Veteran Teacher Workshop offered by SC SeaGrant Consortium, SCDNR & Clemson Extension	50	1
9/14/17	WORKSHOP: "Healthy Pond Series: Making Sense of Pond Design & Drawings" offered by Clemson Extension, SCDNR & ACE Basin NERR	15	1
10/10/17	WORKSHOP: "Green Gardening in the Home Landscape" offered by Clemson Extension & SCDNR	10	1&2
10/26/17	WORKSHOP: 2017 Shorescaping Workshop offered by Clemson Extension & Charleston County Government	19	1&2
11/7/17	WORKSHOP: "Rain Gardens in the Home Landscape" offered by Clemson Extension, Keep Hanahan Beautiful & Berkeley County Government	20	1&2
11/30/17	WORKSHOP: "Healthy Pond Series: Pond Inspection 101" offered by Clemson Extension, SCDNR & ACE Basin NERR	29	1&2
12/4/17	WORKSHOP: "Bluebird Trail Installation & Maintenance" offered by Clemson Extension, Wildbirds Unlimited & Tri-County Master Gardeners	20	1&2
TRAININGS AND CERTIFICATIONS			
Date of Activity	Activity Description	Estimated Impacts	MCM

2016	TRAININGS: Clemson Department of Pesticide Regulation training and certification of pesticide applicators; impact reflects certified applicators in ACSEC region in 2016.	1,169	1
2016	TRAININGS: Clemson Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program; number reflects statewide training participants.	1,254	1
2016	TRAININGS: SC DNR'S SCORE program trained new volunteers to monitor water quality in Charleston Harbor.	3	1
Summer and Fall 2016	TRAININGS: "Carolina Yards Online Guide to Environmentally-Friendly Gardening, multi-week online training, sponsored by Clemson Extension	38	1
Fall 2016	TRAININGS: Tri-County Master Gardener training; topics discussed include multiple stormwater BMP practices.	30	1&2
Spring 2016; Fall 2016	TRAININGS: Master Naturalist Certification programs in Lowcountry, offered by Charleston County Parks and Recreation Commission	24	1&2
Spring 2016; Fall 2016	TRAININGS: Master Pond Manager hybrid online and field-based training; stormwater pond management techniques	56	1&2
Spring 2016; Fall 2016	TRAININGS: Post-Construction BMP Inspector hybrid online and field-based training	65	1
Fall 2017	TRAININGS: Master Gardener four month certification program offered by Clemson Extension	27	1&2
Spring & Fall 2017	TRAININGS: Master Naturalist Certification Program offered by Charleston County Park & Recreation Commission with supporting partners (numerous)	24	1&2
Spring & Fall 2017	TRAININGS: Master Pond Manager Course offered by Clemson Extension	49	1&2
Spring & Fall 2017	TRAININGS: Post Construction BMP Inspector Course	46	1
Continuous	TRAININGS: Certification for commercial, non-commercial and private licensed applicators offered by Clemson's Department of Pesticide Regulation (number of impacts represents Tri-County licensed applicators current through 2017)	11,617	1
Continuous	TRAININGS: Certified Erosion & Prevention and Sediment Control Inspector & Certified Stormwater Plan Reviewer offered by Clemson University. Number reflects statewide participants in certification and recertification classes	1,262	1
CONFERENCES			
Date of Activity	Activity Description	Estimated Impacts	MCM
2/23/16-2/24/16	CONFERENCE: South Carolina Conservation Partnership Conference, supported by Charleston County Soil and Water Conservation District partners	350	1
10/12/16-10/13/16	CONFERENCE: South Carolina Water Resources Conference	350	1

11/3/16	CONFERENCE: 2016 Charleston Area Stormwater Pond Management Conference, offered through partnership between ACSEC partners, Clemson Extension, SC DNR ACE Basin NERR Coastal Training Program, and SC Sea Grant Consortium	150	1
2/21/17-2/23/17	CONFERENCE: South Carolina Conservation Partnership Conference offered by the Soil & Water Conservation Districts	300	1
10/19/17	CONFERENCE: Beaufort Area Stormwater Pond Management Conference offered by SCDNR ACE Basin NERR, Clemson Extension & SC Sea Grant Consortium	98	1
STORM DRAIN MARKING			
Date of Activity	Activity Description	Estimated Impacts	MCM
1/23/16	STORM DRAIN MARKING: Carolina Park, Tomahawk Avenue, Park Avenue in Mount Pleasant; 86 volunteers marked 45 storm drains.	86	2
6/27/16	STORM DRAIN MARKING: Downtown Charleston; 15 volunteers marked 180 storm drains.	15	2
11/11/16	STORM DRAIN MARKING: Downtown Charleston; 15 volunteers marked 100 storm drains.	15	2
3/12/17	STORM DRAIN MARKING: Boy Scout Troop 52 marked 161 storm drains on James Island	14	2
5/22/17-5/26/17	STORM DRAIN MARKING: Sanders-Clyde Elementary School storm drain art mural project	45	2
LITTER SWEEPS			
Date of Activity	Activity Description	Estimated Impacts	MCM
September 2016	LITTER SWEEPS: Beach Sweep, River Sweep; organized by SC Sea Grant Consortium and SC DNR; impacts represent Tri-County participants	4,100	2
May 2016	LITTER SWEEPS: Clean Marine; organized by SC Sea Grant Consortium; impacts represent volunteer participants in region	63	2
2016	LITTER SWEEPS: Keep Charleston Beautiful litter pickup events in Charleston, SC; impacts represent volunteer participants	1,951	2
9/6/16	LITTER SWEEPS: "Litter Butt Study;" survey of litter butt debris and pickup event; impacts represent volunteer participants; sponsored by Surfrider Foundation, Folly Green, NOAA	15	2
Quarterly in 2016	LITTER SWEEPS: Adopt-A-Highway in Berkeley, Charleston, and Dorchester County; impacts represent annual volunteers	3,497	2

September/October 2017	LITTER SWEEPS: Beach Sweep/River Sweep coordinated by SC Sea Grant Consortium & SCDNR (Number reported reflects volunteers in Berkeley, Charleston & Dorchester Cnty)	588	2
7/9/05	LITTER SWEEPS: Keep Charleston Beautiful - multiple two-hour litter sweeps	2,240	2
7/9/05	LITTER SWEEPS: Adopt-A-Boat Landing offered by Berkeley County & Keep Berkeley Beautiful	562	2
Summer 2017	LITTER SWEEPS: "Strawless Summer" litter prevention campaign offered by Surfrider Foundation, Charleston Chapter	120	2
Quarterly in 2017	LITTER SWEEPS: Adopt-A-Highway, 311 miles of highway were adopted in Berkeley & Charleston County.	2,242	2
OYSTER REEF CONSTRUCTION			
Date of Activity	Activity Description	Estimated Impacts	MCM
2016	OYSTER REEF CONSTRUCTION: SC DNR SCORE Program volunteer oyster reef builds; impacts represent volunteer participants	3,422	2
2017	OYSTER REEF CONSTRUCTION: South Carolina Oyster Restoration and Enhancement program offered by SCDNR	4,239	2
WATER QUALITY MONITORING			
Date of Activity	Activity Description	Estimated Impacts	MCM
Weekly/Monthly in 2016	WATER QUALITY MONITORING: SC DNR's SCORE Program volunteer-led water quality monitoring program around constructed oyster reefs.	28	2
Weekly-Monthly in 2016	WATER QUALITY MONITORING: Charleston Waterkeeper bacteria monitoring program; samples collected by volunteers at designated locations in Shem and James Island Creek	6	2
Weekly/Monthly in 2017	MONITORING: Water quality monitoring with volunteers (donated 156 hours) offered by South Carolina Oyster Restoration and Enhancement program	26	2
Weekly/Monthly in 2017	MONITORING: Charleston Waterkeeper volunteer-based water quality monitoring collecting 385 samples in 2017	6	2
RAIN BARREL SALES			
Date of Activity	Activity Description	Estimated Impacts	MCM

6/2/16-6/4/16	RAIN BARREL SALES: ACSEC general public sale; 395 barrels sold to 235 individuals in Tri-County	235	2
6/9/17 - 6/10,/17	RAIN BARREL SALE: Barrels sold at a discounted price to general public offered in partnership with Charleston County Government and Town of Summerville	216	2
NATIVE PLANT SALES			
Date of Activity	Activity Description	Estimated Impacts	MCM
March 2016; October 2016	NATIVE PLANT SALES: Biannual SC Native Plant Society - Lowcountry Chapter's native plant sale to the public	500	2
3/25/17, 10/21/17	NATIVE PLANT SALE: Biannual SC Native Plant Society native plant sale	500	2
YARD CERTIFICATION PROGRAMS			
Date of Activity	Activity Description	Estimated Impacts	MCM
2016	YARD CERTIFICATION PROGRAMS: Carolina Yards environmentally-friendly yard certification program that focuses on best practices for water resource protection; impacts represent total yards certified statewide	307	2
PET WASTE BAG DISPENSER PROGRAMS			
Date of Activity	Activity Description	Estimated Impacts	MCM
2016	PET WASTE BAG DISPENSER PROGRAMS: Keep Charleston Beautiful's "Pick Up After Your Pet" program; installation of 100 pet waste bag stations; 128,000 bags distributed	128,000	2
2016	PET WASTE BAG DISPENSER PROGRAMS: Surfrider Foundation "Mutt Mitt" program which stocks pet waste stations at Folly Beach; 28,000 bags distributed	28,000	2
2017	PET WASTE BAG DISPENSER PROGRAM: Keep Charleston Beautiful "Pick up after your pet" program (Impacts reflects number of bags distributed)	650,000	2
2017	PET WASTE BAG DISPENSER PROGRAM: Town of Mount Pleasant's pet waste bag dispenser program (Impacts reflects number of bags distributed)	240,000	2
BOATER PUMPOUT PROGRAM			
Date of Activity	Activity Description	Estimated Impacts	MCM

2016	BOATER PUMPOUT PROGRAM: Charleston Waterkeeper sewage pumpout program for boat owners in Charleston Harbor	90	2
2017	BOAT PUMPOUT PROGRAM: Service pumpout service to boat owners in the Charleston harbor offered by Charleston Waterkeeper	90	2
YOUTH INVOLVEMENT EVENTS			
Date of Activity	Activity Description	Estimated Impacts	MCM
5/13/16	WORKSHOP: SC Envirothon; weeklong youth program on natural resource topics; sponsored by Charleston Soil and Water Conservation District, and other statewide districts	125	1&2
6/20/16-6/24/16; 7/18/16-7/22/16	SUMMER CAMP: 4H2O "Lowcountry Waterways: Summer camp for youth 10-13; sponsored by Clemson Extension	40	1&2
2016	SHORELINE RESTORATION: "From Seeds to Shoreline program;" student-led Spartina alterniflora restoration project	1,209	1&2
5/5/17	YOUTH INVOLVEMENT: SC Environthon- Youth educational week-long program offered by the Soil and Water Conservation District	130	1&2
06/12/17-06/16/17; 07/24/17-07/28/17	YOUTH INVOLVEMENT: 4-H2O "Exploring Lowcountry Waterways" summer camp offered by Clemson Extension	30	1&2
2017	YOUTH INVOLVEMENT: "From Seeds to Shoreline" youth wetland restoration program offered by SC Sea Grant Consortium in partnership with SCDNR & Clemson Extension	977	1&2
SALT MARSH BUFFER INSTALLATION			
Date of Activity	Activity Description	Estimated Impacts	MCM
4/21/17	SALT MARSH BUFFER INSTALLATION: Adjacent to Folly River offered by Clemson Extension, Folly Green, Surfrider Foundation & Tri-County Master Gardeners	12	2