City of North Charleston
Stormwater Management Plan (SWMP)

5800 Casper Padgett Way
North Charleston, SC 29406-6111
(843) 745-1026

Adopted July 1, 2014
Revised March 2016
Revised March 2020

Prepared in accordance with SCDHEC Permit #SCR030000

CERTIFICATION OF STORMWATER MANAGEMENT PLAN

To the best of my knowledge and belief, I certify that the City of North Charleston 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.

R. Keith Summey	Mayor
Name (Print)	Title

Signature

5/6/2020

Date

Table of Contents

***Table of Contents follows section numbers of #SCR030000. Sections in *gray italics* are not included in the SWMP.**

List of Tables

Appendices

List of Acronyms and Abbreviations

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

City of North Charleston, South Carolina
NPDES Stormwater Management Plan (SWMP)

1.0 Introduction

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

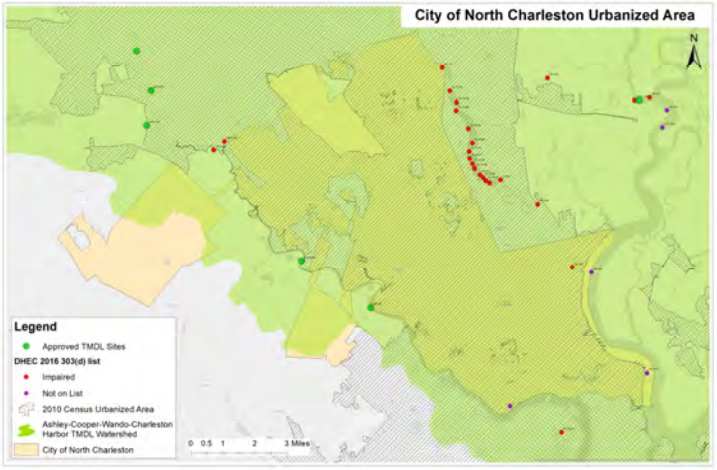
This SWMP addresses the requirements of the NPDES General Permit for Discharges from Regulated SMS4s; Permit No. SCR030000, effective January 1, 2014 and expiring December 31, 2018. Specific language from the SMS4 general permit has been copied and pasted into this SWMP for consistency. The section numbers used in this SWMP correspond with the general permit section numbers. This permit is expired but, in accordance with Section 2.6, the conditions of this permit will continue in force until the effective date of a new permit.

Updates to the SWMP will be included in the revisions sheet in Appendix A.

2.0 Notice of Intent (NOI) Information

The following information is applicable to the City of North Charleston.

Table 1: NOI Table

General Permit Section	NOI Information	Description
2.2.1 Information on the Permittee:		
2.2.1.1	Name of Municipality:	City of North Charleston
	Mailing Address:	City of North Charleston Department of Public Works 5800 Casper Padgett Way North Charleston, SC 29406-6111
	Telephone Number:	843-745-1026
2.2.1.2	Public Entity Type:	City
2.2.2 Information on the SMS4:		
2.2.2.1	Map of the City of North Charleston:	**SMS4 Location:** City of North Charleston **SMS4 Center Coordinates:** Latitude: N34° 54.19' Longitude: W80° 02.29' **SMS4 Urbanized Area:** 59 square miles 
2.2.2.2	Major Receiving Waters:	Ashley River**, Brickyard Creek, Cooper River**, Coosaw Creek, Federwitz Branch, Filbin Creek*, Goose Creek*, Goose Creek Reservoir, McChune Branch, Noisette Creek, Popperdam Creek, Sawpit Creek, Shipyard Creek, Spencer Branch, Turkey Creek

General Permit Section	NOI Information	Description
2.2.2.3	Indian Lands:	No portion of the City of North Charleston's MS4 is located on Indian Country Lands.
2.2.2.4	List of Significant Entities within the City of North Charleston:	The following entities operate a separate storm sewer system within the SMS4 area of the City of North Charleston. Highway Departments • SCDOT Military • Joint Base Charleston
2.2.2.5	Other Entities:	The Clemson Cooperative Extension Service – Carolina Clear Program: Responsible for the Public Education and Outreach (PEO) and Public Involvement/ Participation (PIP) components of the NPDES program.
2.2.2.6	BMP Information:	See Section 4.0 for a discussion of the BMPs for each minimum measure. Each minimum measure contains all available information on the BMPs that are to be implemented, their measurable goals, a schedule for their implementation, and the person(s) responsible.

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

3.0 Special Conditions Applicable to Permitted Stormwater Discharges to Sensitive Waters

The SMS4 permit requires that the City of North Charleston determine whether its systems discharge to sensitive waters. For the purpose of the permit, sensitive waters are waters:

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

3.1 Determination of Receiving Water Conditions and Impacts

The SMS4 general permit requires the City of North Charleston to determine whether stormwater discharges from any part of the SMS4 contribute one or more pollutants directly or indirectly to an impaired waterbody that is listed in the most recent South Carolina 303(d) list. The list identifies water bodies that do not currently meet state water quality standards. The list is intended to be used as a tool to determine what types of water quality improvement measures should be taken. To meet this SMS4 general permit requirement, the City of North Charleston has collected information from SCDHEC on the location of impaired waters, as determined from results of the State's monitoring program, that could potentially be impacted by discharges from the City of North Charleston's SMS4. The following table provides a list of the impaired waterbodies on the 2016 303(d) list that the City of North Charleston's SMS4 contributes to, either directly or indirectly.

Table 2: 2016* 303(d) List of Impaired Stations within the City of North Charleston's SMS4 Area

Major Receiving Waters	Station Description	Station	Pollutant of Concern	Priority Rank
ASHLEY RIVER	ASHLEY RIVER AT MAGNOLIA GARDENS	MD-049	FC	3
			TURBIDITY	3
FILBIN CREEK	FILBIN CREEK AT VIRGINIA AVE, N. CHARLESTON	MD-249	FC	3
ASHLEY RIVER	ASHLEY RIVER 1.8 MI NW RUNNYMEDE PLANTATION	RT-032046	FC	3
GOOSE CREEK	GOOSE CREEK AT US 52 N. CHARLESTON	MD-114	DO	3

**At the time of this report, the 2018 303(d) list was still in draft form; thus, the approved 2016 303(d) list was referenced*

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 appended to this SWMP within 12 months of the effective date of permit coverage. For newly established TMDLs, the City of North Charleston 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. Sampling 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, the City of North Charleston will initiate sampling within 18 months of the effective date of the TMDL.

The Ashley-Cooper-Wando-Charleston Harbor TMDL states that available data and modeling indicates that stormwater and nonpoint sources do not contribute to the DO depression, and are thus not assigned a waste load allocation (WLA). According to the general permit, the City of North Charleston is not responsible for TMDL Monitoring and Assessment for the Ashley-Cooper-Wando-Charleston Harbor TMDL.

According to the permit requirements, the City of North Charleston is not required to develop a TMDL monitoring and assessment plan at this time.

Table 3: List of Approved/Under Development TMDLs within the City of North Charleston's SMS4 Area

TMDL Watershed	Pollutant of Concern	Monitoring Station	Effective TMDL Date
Ashley-Cooper-Wando-Charleston Harbor	Dissolved Oxygen	CSTL-085, CSTL-102, MD-049, MD-052, MD-115, MD-152, MD-264, RO-09363, RT-032046	2003 (Original) 2013 (Revision)

3.3 TMDL Implementation and Analysis

In compliance with Section 3.3.2 of the SMS4 general permit, TMDL Implementation Plans will be developed for all TMDL waters receiving SMS4 discharges of pollutant(s) of concern, except when Section 3.1.1.2 of the SMS4 general permit is applicable. TMDL Implementation 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.

According to the permit requirements, the City of North Charleston is not required to develop a TMDL Implementation Plan at this time.

3.4 Discharges to Impaired Waterbodies

For impaired water bodies for which no TMDL has been assigned, protection will be provided through BMP applications conducted through implementation of the minimum control measures in section 4.2.

3.5 Discharges to Classified Waters

The City of North Charleston does not discharge to waters classified as Outstanding Resource (ORW), Trout (TM, TPGT, & TPT), or Shellfish Harvesting (SFH), pursuant to SC DHEC Bureau of Water Classifications & Standards (R.61-68) Classified Waters (R.61-69).

3.6 Discharges to Source Water Protection Areas

For discharges to Source Water Protection Areas, protection will be provided through BMP applications conducted through implementation of the six minimum measures in section 4.2.

4.0 Stormwater Management Plan (SWMP)

Table 4: SWMP Requirements

SWMP REQUIREMENTS			
Develop and Implement SWMP	Not Started: ☐ In Progress : ☐ Completed: ☒		
	Section: 4.1.2		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Review and update written SWMP document and submit the SWMP to SCDHEC Bureau of Water.	July 1, 2014	Once	Public Works Department
Update Stormwater Management Ordinance	Not Started: ☐ In Progress : ☐ Completed: ☒		
	Section: 4.1.3		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Review and update, as necessary, the Stormwater Management Ordinance, or adopt any new ordinances or other regulatory mechanisms that provide adequate legal authority to control pollutant discharges into and from the SMS4, and to meet the requirements of the MS4 permit.	Throughout the permit term	As necessary	Public Works Department
Develop Enforcement Response Plan (ERP)	Not Started: ☐ In Progress : ☐ Completed: ☒		
	Section: 4.1.5		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Implement an enforcement response plan (ERP).	January 1, 2015	Once	Public Works Department
Update Stormwater Management Plan	Not Started: ☐ In Progress : ☒ Completed: ☐		
	Section: 4.1.10		
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	Public Works Department

4.1.1 Requirements of the NPDES Phase II Program

The City of North Charleston will implement this SWMP to reduce the discharge of pollutants from its SMS4 to the maximum extent practicable to protect water quality.

4.1.2 SWMP Development

The City reviews and updates the written SWMP document periodically. The original SWMP document was submitted to the SCDHEC Bureau of Water by July 1, 2014.

4.1.3 Contents of the SWMP

At a minimum, the City must include ordinances, or other regulatory mechanisms, providing the legal authority necessary to implement and enforce the requirements of the SMS4 general permit. See Appendix D for the City of North Charleston Stormwater Management Ordinance. The City has reviewed its Stormwater Management Ordinance and verified that it provides adequate legal authority to control pollutant discharges into and from the SMS4, and meets the requirements of the SMS4 general permit.

4.1.4 Requirement to Develop Adequate Legal Authority

At a minimum the legal authority will address the following:

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

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

4.1.5 Enforcement Measures and Tracking

The City implemented an enforcement response plan (ERP) in December 2014, and this document will be updated as necessary. The ERP describes the City of North Charleston's potential responses to violations and addresses repeat and continuing violations through progressively stricter responses as needed to achieve compliance.

4.1.5.2 Enforcement Tracking

The City tracks instances of non-compliance either in hard-copy files or electronically.

4.1.5.3 Recidivism Reduction

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

4.1.6 Report Requirements

The City of North Charleston will at a minimum submit the following information in the report (See Section 5.3 for details).

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

4.1.7 SWMP Minimum Control Measure Requirements

The City of North Charleston SWMP will include the following information for each of the six minimum control measures (MCM).

Each MCM is described in Section 4.2 of this SWMP in detail:

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

4.1.10 SWMP Modifications

SCDHEC Bureau of Water may notify the City of North Charleston of the need to modify the SWMP document to be consistent with the permit, in which case the City of North Charleston will have 90 days to finalize such changes to the plan.

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

4.2 Minimum Control Measures

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

departments and staff to implement the BMP, and the implementation schedule for the BMP (i.e. start date, frequency of activities, etc.)

4.2.1 Public Education and Outreach (Minimum Measure #1)

4.2.1.1 Permit Requirements

In order to meet the requirements of Minimum Measure #1, the City of North Charleston has partnered with Clemson University/Carolina Clear to focus on the development and implementation of educational programs designed to inform the public about the impacts that stormwater discharges could have on local waterbodies and the steps that the public can take to reduce pollutants in stormwater runoff. The City of North Charleston intends to work in cooperation with Clemson University/Carolina Clear in order to efficiently reach as many citizens as economically possible through public education and outreach efforts.

Table 5: Minimum Measure #1 Permit Requirements

4.2.1.1.1 The pollutant(s) of concern (POC) within City of North Charleston's watershed area(s):
The pollutants of concern (POC) within the City of North Charleston's watershed area were determined to be: ➢ Bacteria ➢ Nutrients ➢ Sediment
4.2.1.1.2 Description of the POC(s) listed above:
➢ **Bacteria**: Bacteria typically contributes to stormwater pollution due to animal fecal matter in stormwater runoff, failing septic systems, or sanitary sewer leaks/spills and cross connections. ➢ **Nutrients**: Nutrient impairments can be a result of various sources including but not limited to: wastewater treatment operations, urban runoff, wash water operations, runoff from pastures and croplands, fertilizers, and waterfowl waste. ➢ **Sediment**: Sediment typically contributes to stormwater pollution due to erosion of exposed bare soil areas from construction sites or other land disturbing activities.
4.2.1.1.3 Programs targeted at high priority community issues with the potential to decrease the POC's effect on water quality:
The City of North Charleston 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.
4.2.1.1.4 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:
The City of North Charleston 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.

4.2.1.1.5 The message(s) directed at the target audience(s) listed above to achieve the program goals and objectives:
The City of North Charleston 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.
4.2.1.1.6 Education campaign(s) and materials:
The City of North Charleston 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.
4.2.1.1.7 Distribution of campaign materials:
The City of North Charleston 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.
4.2.1.1.8 Quantitative and/or qualitative formative assessment of programs:
The City of North Charleston 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.
4.2.1.1.9 Utilization of public input into the development of this program:
The City of North Charleston 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.
4.2.1.1.10 Implementation of program goals and objectives:
The City of North Charleston 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.
4.2.1.1.11 Process for annual adjustment of program based upon program assessment:
The City of North Charleston will assess the stormwater education/outreach program annually. The City of North Charleston will adjust their educational materials and the delivery of such materials to address any shortcomings found as a result of these assessments. The City of North Charleston 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.

4.2.1.2 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.

In order to meet the requirements of Minimum Measure #1, the City of North Charleston will implement the following BMPs:

- Continue Agreement with Clemson University/Carolina Clear to Implement a Public Education and Outreach Program. See Appendix G for Contract.

Table 6: Best Management Practices – Minimum Measure #1

PUBLIC EDUCATION AND OUTREACH BMPS			
Agreement with Clemson University Cooperative Extension Service – Carolina Clear	**Not Started:** ☐ **In Progress :** ☐ **Completed:** ☒		
	Section: 4.2.1		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Contract with Clemson University to implement a public education/outreach program for the City of North Charleston.	Throughout Permit Term	Annually	Public Works Department and Clemson University/ Carolina Clear
Measurable Goal:			
• A program that provides public education concerning water quality issues in the watershed area of the City of North Charleston.			
Measurable Goal Update:			
• The City of North Charleston maintains a contract with Clemson University/Carolina Clear (Appendix G) to meet the permit requirements of Minimum Measure #1.			

4.2.2 Public Involvement/Participation (Minimum Measure #2)

4.2.2.1 Permit Requirements

The City of North Charleston will partner with Clemson University/Carolina Clear in order to efficiently reach as many citizens as economically possible through public involvement and participation efforts. Clemson University/Carolina Clear will provide the citizens of the City of North Charleston opportunities to participate in activities and events relating to water quality preservation and water quality education.

Table 7: Minimum Measure #2 Permit Requirements

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

4.2.2.2 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. The following sections describe the components of the City of North Charleston's Public Involvement/Participation program:

In order to meet the requirements of Minimum Measure #2, the City of North Charleston will:

- Continue to implement its written procedures (Contract) with Clemson University/Carolina Clear to Implement a Public Involvement and Participation Program. See Appendix G for Contract and written procedures.
- Provide Access to Information for the SWMP

The following sections describe the components of the City of North Charleston's Public Involvement/Participation program:

Table 8: Best Management Practices – Minimum Measure #2

PUBLIC INVOLVEMENT/PARTICIPATION BMPS			
Opportunities for Citizen Participation	**Not Started:☐ In Progress :☐ Completed:☒**		
	Section: 4.2.2.1.1		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Contract with Clemson University to implement a public involvement/participation program for the City of North Charleston.	Throughout Permit Term	Annually	Public Works Department and Clemson University/ Carolina Clear
Measurable Goal:			
• A program that will provide the citizens of the City of North Charleston opportunities to participate in activities and events relating to water quality preservation and water quality education.			
Measurable Goal Update:			
• The City of North Charleston maintains a contract with Clemson University/Carolina Clear (Appendix G) to meet the permit requirements of Minimum Measure #2.			
Provide Access to Information for the SWMP	**Not Started:☐ In Progress :☐ Completed:☒**		
	Section: 4.2.2.1.2		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Ensure the public can easily find information about the SWMP.	December 31, 2014	Once during permit term	Public Works Department
Measurable Goal:			
• The City of North Charleston will include the SWMP on the City's webpage.			
Measurable Goal Update:			
• The City of North Charleston posted their SWMP on their Stormwater Management and Permitting website: http://www.northcharleston.org/Residents/Environment-Information-(1)/Stormwater-Management.aspx.			
Written Procedures for Implementing MCM#2	**Not Started:☐ In Progress :☐ Completed:☒**		
	Section: 4.2.2.1.3		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Develop written procedures for implementing the public involvement program.	Throughout Permit Term	Annually	Public Works Department Clemson University/ Carolina Clear
Measurable Goal:			
• Through a Contract with Clemson University/Carolina Clear.			
Measurable Goal Update:			
• The City of North Charleston maintains a contract with Clemson University/Carolina Clear (Appendix G) to meet the permit requirements of Minimum Measure #2.			

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

4.2.3.1 Permit Requirements

The City of North Charleston has an established IDDE program including procedures for dry-weather screening and illicit tracking activities. As needed, the dry-weather screening and illicit tracking procedures will be edited to meet the SMS4 general permit requirements. Priority areas have been established based on the higher likelihood of illicit connections, and outfalls located within the priority areas will be visited to check for dry weather flow. Outfalls with dry weather flow will be screened to identify potential illicit discharges. Illicit tracking activities will be documented for review.

Table 9: Minimum Measure #3 Permit Requirements

4.2.3.2	Implement an IDDE program and procure the necessary legal authority.
	The City of North Charleston has adopted a comprehensive stormwater management ordinance which can be found in Appendix D. This document contains a section addressing illicit discharges. This document will be updated where necessary according to the requirements for the IDDE program described in Section 4.2.3.2.
4.2.3.2.1	Development of the storm sewer system map:
	The City of North Charleston updated the storm sewer system map showing the location of all outfalls, and names and locations of all waters of the United States that receive discharges from those outfalls. The storm sewer map will be updated as needed to show new outfalls due to new development or expansion of the City limits.
4.2.3.2.2	Identification of priority areas.
	The City of North Charleston has determined that, given the City's large industrial and commercial areas, the entire City is a priority area for illicit detection and elimination. The City enlisted the help of maintenance, sanitation, and horticulture field crews to identify potential illicit discharges and report them accordingly. This procedure ensures that the drainage system is inspected for potential illicits at least once every three months.
	THIS SECTION INTENTIONALY LEFT BLANK

4.2.3.2.3.a Field screening procedures and implementation:
The City of North Charleston conducts dry weather field screening and/or analytical monitoring, when necessary, to identify the source of illicit discharges. At a minimum, the City of North Charleston will identify points, outfalls, or major outfalls to conduct field screening in the drainage area of such non-stormwater discharges. Develop a field screening portion of the IDDE program that will include: ➢ The areas and the schedule for conducting the screening, the proposed location of outfalls, or field screening points. ➢ A description of field screening equipment with respective methodologies for use and a description to why the screening method used is appropriate for the area. ➢ Conducting all dry weather screening activities will be conducted after 72-hours of continuous dry conditions following at least 0.10 inch of rainfall. ➢ Documentation of the elimination of all illicit discharge. Documentation procedures will be developed as described in section 4.2.3.2.5/6
4.2.3.2.3.b Field Screening Assessment:
The City of North Charleston assessed the effectiveness of the Field Screening component of their IDDE program to determine if the level of effort is adequate in attaining the effective prohibition of non-stormwater discharges into the MS4. The City of North Charleston determined that their field screening protocols were effective at identifying and eliminating illicit discharges.
4.2.3.2.3.c Procedures for notifying another MS4 of an illicit discharge.
For non-traditional MS4 permittees, if illicit connections or illicit discharges are observed related to another operator's municipal storm sewer system then the City of North Charleston will notify the other operator as soon as practical.
4.2.3.2.3.d Addressing a notification of an illicit discharge by another operator:
The City of North Charleston will follow appropriate procedures when notified of an illicit discharge by another MS4 operator.

4.2.3.2.4/5 Tracing the source of an illicit discharge:

The City of North Charleston has an established IDDE program including procedures for dry-weather screening and illicit tracking activities.

After becoming aware of an illicit discharge, the City of North Charleston initiates an investigation(s) to attempt to identify and locate the source of any continuous or intermittent non-stormwater discharge as soon as practical.

The City of North Charleston immediately reports 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 the appropriate public utility owner as soon as practical.

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, the City of North Charleston documents 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 Documenting illicit discharges:

The City of North Charleston determines and documents through their investigations the source of all confirmed illicit discharges. If the source of the suspected illicit discharge is found to be a suspected non-compliance with an NPDES permit, the appropriate SCDHEC Regional Office will be notified.

a. If an illicit discharge is found, but within six (6) months of the beginning of the investigation neither the source nor the same non-stormwater discharge has been identified/observed, then the City of North Charleston will maintain written documentation for review by the permitting authority.

b. If the observed discharge is intermittent, the City of North Charleston 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, the City of North Charleston will maintain written documentation for review by the permitting authority. However, since this is an ongoing program, the City of North Charleston will periodically recheck these suspected intermittent discharges.

4.2.3.2.7 Corrective Action Plan to eliminate illicit discharges:
Once the source of the illicit discharge has been determined, the City of North Charleston will: a. Notify the responsible party of the problem as soon as practical. 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, the City of North Charleston 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 mechanics:
The City of North Charleston promotes, publicizes, and facilitates an illicit reporting mechanism for the public and staff to report illicit discharges and establish and implement citizen request response procedures. The City of North Charleston has: a. Developed 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. Included 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:
The City of North Charleston implements 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. The City of North Charleston keep tracks of all training and follow up training provided to address IDDE and to the staff trained in this MCM.

4.2.3.2 BMP Implementation

In order to meet the requirements of Minimum Measure #3, the City of North Charleston has listed BMPs that focus on the detection and elimination of illicit discharges into the SMS4. Evaluation of the success of this minimum measure will be based on the level of implementation of the BMPs included in this minimum measure. The responsibility for implementation of this minimum measure is described with each BMP procedure. The following sections describe the components of the City's Illicit Discharge Detection and Elimination (IDDE) program. The screening procedures for the IDDE program will be included in Appendix E once updated.

In order to meet the requirements of Minimum Measure #3, the City of North Charleston will:

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

Table 10 describes the components of City of the North Charleston's Illicit Discharge Detection and Elimination (IDDE) program.

Table 10: Best Management Practices - Minimum Measure #3 -

IDDE BMPs			
Update Stormwater Management Ordinance	**Not Started:** ☐ **In Progress :** ☐ **Completed:** ☒		
	Section: 4.2.3.2		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Update the City of North Charleston's stormwater management ordinance to include the requirements for the IDDE program stated in section 4.2.3.2.	December 31, 2014	As Needed	Public Works Department
Measurable Goal:			
• Update the City of North Charleston's stormwater management ordinance where necessary.			
Measurable Goal Update:			
• The City of North Charleston performed a review of their stormwater management ordinance and confirmed that it is in compliance with permit requirements. The City will continue to review and update the ordinance as needed.			

Update Storm Sewer Map	Not Started: ☐ In Progress : ☐ Completed: ☒		
	Section: 4.2.3.2.1		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Update the storm sewer map as needed to show the location of all outfalls and names and locations of all waters of the United States that receive discharge from those outfalls.	December 31, 2014	As Needed	Public Works Department
Measurable Goal:			
• Update storm sewer map as needed to show new outfalls.			
Measurable Goal Update:			
• The City of North Charleston has completed their storm sewer map. This map will be updated as needed to show new outfalls.			

Identify Priority Areas	Not Started: ☐ In Progress : ☐ Completed: ☒		
	Section: 4.2.3.2.2		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Create a map of illicit priority areas based on an identification of areas with a higher likelihood of illicit connections. The map will be updated annually.	December 31, 2014	Annually	Public Works Department
Measurable Goal:			
• A map which sets the boundaries for SMS4 Dry-Weather Screening.			
Measurable Goal Update:			
• The City of North Charleston completed an illicit prioritization area analysis to identify illicit priority areas.			

Update IDDE Procedures	Not Started: ☐ In Progress : ☐ Completed: ☒		
	Section: 4.2.3.2.3		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Implement/update as applicable, a dry weather field screening and analytical monitoring procedures to detect and eliminate illicit discharges to the MS4. Include procedures as part of the IDDE program following the requirements in Section 4.2.3.2.3.	December 31, 2014	Annually	Public Works Department
Measurable Goal:			
• Implement/update the Outfall and Pipe Inventory Field Manual.			
Measurable Goal Update:			
• The City of North Charleston has developed the Dry Weather Screening and Field Investigations for Illicit Discharges Guidance Document, included as Appendix E to this report.			

Identify Screening Points	Not Started: ☐ In Progress : ☒ Completed: ☐		
	Section: 4.2.3.2.3a		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Identify all field screening points within the priority area. Include a schedule for conducting the screening.	June 30, 2016	Annually	Public Works Department
Measurable Goal:			
• A list of all field screening points.			
• A schedule for conducting the field screening.			
Measurable Goal Update:			
• The City of North Charleston actively conducts field screening to detect and eliminate illicit discharges. The City is highly urbanized with a large number of commercial and industrial areas. As such, the City relies largely on the maintenance, sanitation, and horticulture field personnel who are trained to identify potential illicit discharges and report them to the appropriate person. This is an effective strategy for the City by inspecting the entire City's drainage network at least once every three months using existing resources. This is an on-going effort by the City.			
Conduct Field Screening	Not Started: ☐ In Progress : ☒ Completed: ☐		
	Section: 4.2.3.2.3a		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Conduct dry weather flow screening at outfalls in the priority area and at known dry weather discharges.	June 30, 2016	Annually	Public Works Department
Measurable Goal:			
• Locate potential illicit discharges in the priority area.			
Measurable Goal Update:			
• The City relies largely on the maintenance, sanitation, and horticulture field personnel who are trained to identify potential illicit discharges and report them to the appropriate person.			
Develop Illicit Tracking Procedures	Not Started: ☐ In Progress : ☐ Completed: ☒		
	Section: 4.2.3.2.4/5/8		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
The City of North Charleston will develop procedures for tracking illicit discharges. The illicit tracking procedures will include minimum investigation requirements in section 4.2.3.2.5. In addition, the illicit tracking procedures will include requirements for responding to public notices. (section 4.2.3.2.8.a/b)	December 31, 2014	Once during permit term	Public Works Department
Measurable Goal:			
• Develop illicit tracking procedures.			
Measurable Goal Update:			
• The City of North Charleston has developed the Dry Weather Screening and Field Investigations for Illicit Discharges Guidance Document, included as Appendix E to this report.			

Conduct Illicit Tracking/Determine Source of Illicit Discharge	Not Started: ☐ In Progress : ☒ Completed: ☐ Section: 4.2.3.2.4/5		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
The City of North Charleston will conduct illicit tracking at outfalls identified as potential illicit discharges by the field screening effort.	Confirmed illicit discharges will be tracked within a timeframe listed in section 4.2.3.2.4/5	As Needed	Public Works Department
Measurable Goal:			
• Determine source of potential illicit discharges identified during field screening.			
Measurable Goal Update:			
• The City relies largely on the maintenance, sanitation, and horticulture field personnel who are trained to identify potential illicit discharges and report them to the appropriate person. City stormwater personnel identify, track, and eliminate potential illicit discharges as necessary.			

Eliminate Illicit Discharges	Not Started: ☐ In Progress : ☒ Completed: ☐ Section: 4.2.3.2.7		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Once the source of an illicit discharge has been determined, the City North Charleston will follow procedures (a-e) of section 4.2.3.2.7 of the permit to eliminate the illicit discharge	Confirmed illicit discharges will be eliminated within the timeframe listed in section 4.2.3.2.7.b	As Needed	Public Works Department
Measurable Goal:			
• Documentation of eliminated illicit discharges.			
Measurable Goal Update:			
• The City relies largely on the maintenance, sanitation, and horticulture field personnel who are trained to identify potential illicit discharges and report them to the appropriate person. City stormwater personnel identify, track, and eliminate potential illicit discharges as necessary..			

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Document Illicit Discharge Investigations	Not Started: ☐ In Progress : ☒ Completed: ☐ Section: 4.2.3.2.5/6		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
The City of North Charleston will document illicit discharge tracking and elimination activities to include the following information: • Date(s) the illicit discharge was observed • Results of the illicit investigation • Results of any follow-up investigations; • Date the investigation was closed. • Source of illicit discharge • Documentation for unresolved illicit tracking investigations in which no source is located. (as required by section 4.2.3.2.6.a of the permit) • Documentation for intermittent illicit discharges (as required by section 4.2.3.2.6.b of the permit)	Documentation will begin within 6 months of beginning investigation	As Needed	Public Works Department
Measurable Goal:			
• Document illicit tracking and elimination activities.			
Measurable Goal Update:			
• The City of North Charleston documents illicit discharge tracking and elimination activities. This is an ongoing effort by the City.			

Field Screening Assessment	Not Started: ☐ In Progress : ☐ Completed: ☒ Section: 4.2.3.2.3b		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Assess the effectiveness of the Field Screening program by the end of permit year 3.	December 31, 2016	Once during permit term	Public Works Department
Measurable Goal:			
• A summary assessing the effectiveness of the Field Screening program.			
Measurable Goal Update:			
• The City of North Charleston has evaluated the field screening program and determined that the use of various field crews to initially identify potential illicit discharges is an effective Field Screening Program. Supervisors frequently provide refreshers to field crews during meetings regarding the detection and reporting of potential illicit discharges.			

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Develop Public Reporting Mechanism	Not Started: ☐ In Progress : ☐ Completed: ☒		
	Section: 4.2.3.8		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
The City of North Charleston will promote, publicize, and facilitate a hotline or website link for the public and staff to report illicit discharges. Citizens will also be able to report violators to the Engineering Department.	January 1, 2015	Annually	Public Works Department
Measurable Goal:			
• Provide IDDE training to appropriate field staff.			
Measurable Goal Update:			
• The City of North Charleston provides a phone number to reach public works during business hours as well as a number to call for reporting emergency problems. This number is listed on the City of North Charleston Public Works webpage.			
Employee Training	Not Started: ☐ In Progress : ☒ Completed: ☐		
	Section: 4.2.3.9		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
The City of North Charleston will implement a training program for all appropriate municipal field staff who may come into contact with, or otherwise observe, an illicit discharge or illicit connection to the storm sewer system.	January 1, 2015	Annually	Public Works Department
Measurable Goal:			
• Provide IDDE training to appropriate field staff.			
Measurable Goal Update:			
• The City of North Charleston conducts training for all appropriate municipal field staff who may be in a position to observe and subsequently report potential illicit discharges. This is an ongoing effort for the City.			

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

4.2.4.1 Permit Requirements

The City of North Charleston will update the construction program by developing and implementing BMPs in order to meet the SMS4 general permit requirements. The City will update appropriate design requirements and revise the corresponding SWP3 plan review requirements. Site inspection procedures will be updated to conform to the SMS4 permit requirements, and an enforcement response plan will be developed to determine how the City will use specific type of responses to address various types of violations. In addition, the City will develop a communication process with construction operators to educate them about areas in which improvements are needed.

Table 11: Minimum Measure #4 Permit Requirements

4.2.4.4.1 Regulatory requirement for erosion and sediment controls:
The requirement for sediment and erosion controls is located in the City of North Charleston ordinance section 3.3 (Design and Engineering Standards) and section 3.5 (Stormwater Design Standards Manual). The provision for sanctions to ensure compliance can be found in the City of North Charleston ordinance section 6.1 (Enforcement). A copy of the City of North Charleston's ordinance is included in Appendix D. This comprehensive stormwater management ordinance, including prohibition of polluted stormwater runoff from construction sites, was adopted in August of 2007. In addition, the Permitting Standards and Procedures Manual require that necessary erosion and sediment control practices be included in the design submittal package prior to project approval.
4.2.4.4.2 Requirements for erosion and sediment controls and soil stabilization practices:
The City of North Charleston provides requirements for construction site operators to implement appropriate BMPs such as erosion and sediment controls and soil stabilization practices in sections 3.3 & 5 –Design and Engineering Standards and Stormwater Design Standards Manual of the ordinance. A copy of the City of North Charleston's ordinance is included in Appendix D. In addition to the requirements in the ordinance, the City of North Charleston provides design assistance for erosion and sediment controls and soil stabilization practices in the City of North Charleston Permitting Standards and Procedures Manual.
4.2.4.4.3 Requirements for pollution prevention measures:
The City of North Charleston currently has pollution prevention guidelines in the City of North Charleston Permitting Standards and Procedures Manual. The City of North Charleston will update the Stormwater Ordinance and Procedures Manual to provide requirements for the design, installation and maintenance of effective pollution prevention measures for construction site operators to: 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. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures. e. 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):

The City of North Charleston will require each operator of a construction activity to prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) prior to the disturbance of land for the SMS4 to review and approve.

4.2.4.4.5 Review of SWP3:

The City of North Charleston's plan review procedures will at a minimum meet the following:

a. Make it clear to operators of construction activity that they are prohibited from commencing construction activity until they receive of written approval of the plans.

b. The City of North Charleston will update/add appropriate technical criteria to the City of North Charleston Stormwater Permitting Standards and Procedures Manual for SWP3 requirements to be in compliance with the effective NPDES General Permit for Stormwater Discharges from Construction Activities, SCR100000.

c. The City of North Charleston will add a statement in the Stormwater Ordinance and the City of North Charleston Stormwater Permitting Standards and Procedures Manual that SWP3 submittals must include the rationale used for selecting control measures, including how the control measure protects a waterway or stormwater conveyance.

d. The City of North Charleston will use qualified individuals, knowledgeable in the technical review of SWP3 to conduct reviews.

e. The City of North Charleston documents the review of each SWP3 plan using a checklist.

f. The City of North Charleston will develop 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:

The City of North Charleston will update the appropriate documents to, at a minimum, include the following procedures:

a. The City of North Charleston currently maintains an inventory of all active construction projects. The inventory will be continuously updated as new projects are permitted and projects are completed. The inventory will be edited to contain relevant contact information for each project (e.g., name, address, phone, etc.), the size of the project and area of disturbance. The City of North Charleston will make the inventory available to SC DHEC upon request. As part of this inventory,

    i. The City of North Charleston 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. The City of North Charleston will implement procedures for inspecting construction projects in accordance with the frequency listed in the SMS4 Permit.

c. The City of North Charleston will adequately inspect all phases of construction. At a minimum, inspections will occur following installation of initial BMPs, during active construction, and after final site stabilization.

d. The City of North Charleston will have trained and qualified inspectors. The City of North Charleston will also continue to follow, and revise as necessary, written procedures outlining the inspection and enforcement procedures.

    Inspections of construction sites will, 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 the City of North Charleston'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):
The City of North Charleston developed an Enforcement Response Plan (ERP), included as Appendix F. The ERP contains descriptions of how the City of North Charleston will use specific type of responses to address various types of violations. The ERP includes, but is not limited to: a. Types of response; 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 ERP is reasonably effective in reducing pollutant discharges to the MEP and to protect water quality.
4.2.4.8 MS4 Staff Training:
The City of North Charleston 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.
4.2.4.9 Construction Site Operator and Public Involvement:
4.2.4.9.a Construction Operator Education:
The City of North Charleston will develop and implement an effective communication process with construction contractors to educate them on areas in which improvements are needed to enforce any required actions.
4.2.4.9.b Public Involvement:
The City of North Charleston will consider public responses for program modifications through public education and outreach programs.

4.2.4.2 BMP Implementation

In order to meet the requirements of Minimum Measure #4, the City of North Charleston has listed BMPs that focus on the reduction of pollutants in stormwater runoff to the SMS4 from construction activities that result from a land disturbance of greater than or equal to one acre. The City of North Charleston will continue and improve existing BMPs that provide assistance and ensure compliance through routine inspections. Evaluation of the success of this minimum measure will be through careful analysis of the measurable goals for each BMP included in this minimum measure. Measurable goals for each BMP were selected by formulating attainable goals for the various BMP implementation steps or tasks. In order to meet the requirements of Minimum Measure #4, the City of North Charleston will:

- Update Pollution Prevention BMP Requirements
- Revise SWP3 Submittal & Review Requirements
- Develop SWP3 Review Procedures for Discharges to Impaired Waters
- Modify and Maintain a Construction Site and Site Inspection Inventory
- Develop/Modify Site Inspection Procedures
- Develop Section of ERP for Construction Activities
- Construction Operator Training/Education

Table 12 describes the components of the City of North Charleston's construction site stormwater runoff control program:

Table 12: Best Management Practices - Minimum Measure #4

CONSTRUCTION RUNOFF BMPs			
Update Pollution Prevention Requirements	**Not Started: ☐ In Progress : ☐ Completed: ☒**		
	Section: 4.2.4.4.2/3		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Update the Stormwater Ordinance to include all requirements for Pollution Prevention Measures listed in Section 4.2.4.4.2 and 4.2.4.4.3.	December 31, 2014	Once during permit term	Public Works Department
Measurable Goal:			
• Add Pollution Prevention requirements to the Stormwater Ordinance.			
Measurable Goal Update:			
• The City of North Charleston performed a review of their stormwater management ordinance and confirmed that it is in compliance with permit requirements. The City will continue to review and update the ordinance as needed.			
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Revise SWP3 Submittal & Review Requirements	Not Started: ☐ In Progress : ☐ Completed: ☒ Section: 4.2.4.4.4/5.b/c		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Update the Stormwater Ordinance and the City of North Charleston Permitting Standards and Procedures Manual.	December 31, 2014	Once during permit term	Public Works Department
Update the Stormwater Ordinance and the City of North Charleston Permitting Standards and Procedures Manual to ensure SWP3 submittals include a rationale used for selecting control measures, including how the control measure protects a waterway or stormwater conveyance.	December 31, 2014	Once during permit term	Public Works Department
Update plan review procedures to address new requirements listed above.	December 31, 2014	Once during permit term	Public Works Department
Measurable Goal:			
• Update SWP3 submittal requirement documents and corresponding plan review procedures to include items listed above.			
Measurable Goal Update:			
• The City of North Charleston performed a review of their stormwater management ordinance and Permitting Standards and Procedures Manual and confirmed that it is in compliance with permit requirements. The City will continue to review and update the ordinance as needed.			
Develop SWP3 Review Procedures for Discharges to Impaired Waters	Not Started: ☐ In Progress : ☐ Completed: ☒ Section: 4.2.4.4.5.f		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
The City of North Charleston will develop procedures outlined in section 4.2.4.5.f for SWP3 review for construction activity that discharge pollutant(s) of concern to TMDL waters and to waters on the 303(d) List of Impaired Waters.	December 31, 2015	Once during permit term	Public Works Department
Measurable Goal:			
• Develop plan review procedures for construction discharges to impaired waters.			
Measurable Goal Update:			
• The City of North Charleston employs plan review procedures that ensure that all construction sites take measures to prevent the discharge of pollutants of concern.			

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Modify and Maintain Construction Site and Site Inspection Inventory	Not Started: ☐ In Progress : ☐ Completed: ☒ Section: 4.2.4.6(a)		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
The City of North Charleston will maintain an inventory of all active construction projects. The inventory will be edited to include information for: ➢ Relevant contact information ➢ The size of the project ➢ Area of disturbance ➢ Number of inspections by the City of North Charleston for each construction site ➢ Inspection results and enforcement actions	December 31, 2014	Inventory will be updated as needed	Public Works Department
Measurable Goal:			
• Develop and maintain a database that provides general site information and ensures appropriate site inspections are conducted by the construction operator.			
Measurable Goal Update:			
• The City of North Charleston maintains an electronic inventory of all active construction projects.			

Modify Site Inspection Procedures	Not Started: ☐ In Progress : ☐ Completed: ☒ Section: 4.2.4.6(b-d)		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
The City of North Charleston will modify site inspection procedures to be in compliance with permit section 4.2.4.6(b-d).	December 31, 2016	Once during permit term	Public Works Department
Measurable Goal:			
• Develop a SOP for site inspection procedures that includes the items listed above.			
Measurable Goal Update:			
• The City of North Charleston Stormwater Permitting and Design Manual states that inspections must be conducted in compliance with state regulations.			

ERP for Construction Activities	Not Started: ☐ In Progress : ☐ Completed: ☒ 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.	December 31, 2014	Once during permit term	Public Works Department
Measurable Goal:			
• Develop an ERP for construction activities.			
Measurable Goal Update:			
• The City of North Charleston implemented an enforcement response plan (ERP) in December 2014 that includes construction activity requirements.			

Construction Operator Training/Education	Not Started: ☐ In Progress : ☒ Completed: ☐ Section: 4.2.4.9		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
The City of North Charleston 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. Carolina Clear discussed in Minimum Measure #1 will be used.	Throughout Permit Term Beginning in Year 2	Annually	Public Works Department
Measurable Goal:			
• Construction operator training/education through the use of Carolina Clear.			
Measurable Goal Update:			
• The City of North Charleston effectively communicates with construction contractors through the City's contract with Clemson University/ Carolina Clear (Appendix G).			

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

4.2.5.1 Permit Requirements

The post construction stormwater management program is designed to give the City of North Charleston the authority to require structural and non-structural stormwater quality BMPs on sites being developed. The City of North Charleston currently provides design requirements to control stormwater discharges from new development and redeveloped sites and has established performance standards for addressing the first flush of runoff. The City of North Charleston will improve the post construction program by ensuring post construction BMPs are inspected and maintained.

Table 13: Minimum Measure #5 Permit Requirements

4.2.5.1 Post-Construction Stormwater Management Program:
The City of North Charleston has implemented a program 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 program must apply to private and public development sites, including roads. The Post-Construction Stormwater Management Program will ensure that controls are in place to meet the performance standards in Section 4.2.5.2 to the MEP and to prevent or minimize water quality impacts.

4.2.5.2	Site Performance Standards:
	The City of North Charleston has updated the necessary documents to meet the site performance standards. The City of North Charleston will establish, implement, and enforce a requirement that owners or operators of new development and redeveloped sites discharging to the MS4, which disturb greater than or equal to one acre (including projects that disturb less than one acre that are part of a LCP), design, install, implement, and maintain stormwater control measures that approximate pre-development conditions to the MEP and protect water quality. A new site performance standard will be developed and implemented based on the requirements of Section 4.2.5.2.2 and will address the first inch of runoff.
4.2.5.3	Site Plan Review:
	Site performance standards for requirements to address the first inch of runoff are included in the City's plan review checklist. Plan review for site performance standards developed during the permit term will be added to the plan review checklist.
4.2.5.4	Long-Term Maintenance of Post-Construction Stormwater Control Measures:
	All structural stormwater control measures installed and implemented to meet the site performance standards will be maintained in perpetuity. The City of North Charleston will ensure the long-term maintenance of structural stormwater control measures installed. The City of North Charleston will require that property owners or operators of any new development or redeveloped site subject to the performance standards in Part 4.2.5.2 provide verification of maintenance for the approved structural stormwater control measures used to comply with the performance standards.
4.2.5.5	Inventory of Post-Construction Stormwater Control Measures:
	The City of North Charleston maintains an inventory of all post-construction structural stormwater control measures installed and implemented at new development and redeveloped sites, including both public and private sector sites located within the permit area. At a minimum, the inventory will contain all BMPs constructed since the effective date starting with the effective date of this permit.
4.2.5.6	Inspections and Enforcement:
4.2.5.6.1	Inspection Procedures:
	To ensure that all stormwater control measures are operating correctly and are being maintained as required consistent with its applicable maintenance agreement, the City of North Charleston conducts inspections of each project site covered under the performance standards listed in Section 4.2.5.2, at least one time during the permit term.
4.2.5.6.2	Post-Construction Notification:
	Within 30 days of completion of construction of any project required to meet the performance standards, the City of North Charleston conducts a post construction inspection to verify that BMP have been installed as per approved plans. The City of North Charleston will use the existing close out application as the means for construction operators to notify the City of construction completion.

4.2.5.6.3 Inspection Reports:
The City of North Charleston documents its inspection findings in an inspection report. The City of North Charleston will document and maintain records of inspection findings and enforcement actions and make them available for review by the permitting authority.

4.2.5.2 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. Measurable goals for each BMP were selected by formulating attainable goals for the various BMP implementation steps or tasks. In order to meet the requirements of Minimum Measure #5, the City of North Charleston will:

- Modify Site Performance Standards
- Develop Long Term Maintenance Requirements for Post Construction BMPs
- Create Post Construction BMP Inventory
- Develop Post Construction BMP Inspection Program

Table 14 describes the components of the City of North Charleston's Post-Construction stormwater management program:

Table 14: Best Management Practices – Minimum Measure #5

POST CONSTRUCTION RUNOFF BMPs			
Modify Site Performance Standards	**Not Started:** ☐ **In Progress :** ☐ **Completed:** ☒		
	Section: 4.2.5.2		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Review and update, as necessary, site performance standards to address the "first inch" standard.	December 31, 2016	Once during permit term	Public Works Department
Measurable Goal:			
• Review and update, if necessary, the post-construction site performance standards.			
Measurable Goal Update:			
• The City has updated their Design Manual to be in compliance with the general permit requirements. The City is continually looking to improve their Manual and will update it as necessary.			

Post Construction BMP Inventory	Not Started: ☐ In Progress : ☒ Completed: ☐ Section: 4.2.5.5		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Develop an inventory of all City permitted post construction BMPs constructed since the effective date of permit SCR030000 (January 1, 2014).	Throughout the permit term	Once during permit term	Public Works Department
Update City permitted Post Construction BMP Inventory.	Throughout Permit Term Beginning in Year 2	Annually	Public Works Department
Measurable Goal:			
• Provide an inventory of City permitted post construction BMPs.			
Measurable Goal Update:			
• The City of North Charleston maintains an inventory of all City-permitted post-construction BMPs constructed since the permit effective date. This is an ongoing effort by the City, and the inventory is updated as necessary.			

Post Construction BMP Inspections Program	Not Started: ☐ In Progress : ☒ Completed: ☐ Section: 4.2.5.4/6		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Develop procedures and forms for post construction BMP installation inspections.	December 31, 2016	Once during permit term	Public Works Department
Conduct post construction BMP inspections on City permitted post-construction BMPs within 30 days of notification of construction completion to ensure BMP is installed per approved plans.	Throughout Permit Term Beginning in Year 2	Annually	Public Works Department
Develop procedures and forms for post construction BMP maintenance inspections.	December 31, 2016	Once during permit term	Public Works Department
Conduct post construction BMP inspections on City permitted post-construction BMPs to ensure BMPs are maintained properly.	Throughout Permit Term Beginning in Year 2	Once during permit term	Public Works Department
Document and maintain records of inspection findings and enforcement actions and make them available for review by the permitting authority.	Throughout Permit Term Beginning in Year 2	Annually	Public Works Department
Measurable Goal:			
• Develop procedures and forms for Post Construction BMP installation inspections and include procedures in this document.			
• Inspect all City permitted post construction BMPs within 30 days of construction completion.			
• Develop procedures and forms for Post Construction BMP maintenance inspections and include procedures in this document.			
• Inspect appropriate construction sites to ensure City permitted Post Construction BMPs are maintained and operating correctly.			
• Provide documentation of Post Construction BMP inspections.			

Measurable Goal Update:
• The City of North Charleston Stormwater Permitting and Design Manual has procedures and forms in place for post construction BMP installation and maintenance inspections that meet the permit requirements. These inspections, and any findings and enforcement actions, are documented. This is an ongoing effort for the City.
• The City of North Charleston is currently updating their Permitting Standards and Procedures Manual to improve their inspection and enforcement methodologies

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

4.2.6.1 Permit Requirements

In order to meet the requirements of Minimum Measure #6, the City of North Charleston will implement a range of BMPs targeted to reduce pollutants from City-Owned facilities and storm sewer systems. A Citywide inventory of major municipal facilities will be developed, and each facility will be assessed for the potential pollutant discharges. Based on the assessment, a list of high priority facilities will be developed, and annual inspections will be conducted at the high priority facilities. The City of North Charleston will prioritize their owned and /or operated stormwater management systems and implement a maintenance schedule. All City-Owned structural controls (stormwater BMPs) will be inspected and maintained. In addition, the City will develop a set of pollution prevention measures for operation and maintenance activities. The City of North Charleston will provide training to appropriate employees to ensure pollution prevention and good housekeeping activities are practiced throughout the City's separate departments.

Table 15: Minimum Measure #6 Permit Requirement

4.2.6.1	Development of a Municipal Facility and Stormwater Control Inventory:
	The City of North Charleston maintains an inventory of significant City-owned and stormwater controls that are not covered under a separate general or individual NPDES permit (i.e. industrial, solid waste, etc.). The City of North Charleston also has a list of industrial facilities owned or operated by the City that are subject to SCDHEC NPDES General Permit for Stormwater Discharges associated with Industrial Activity (SCR000000) or individual NPDES permits for discharges of stormwater associated with industrial activity that ultimately discharge to the City's SMS4. The SCDHEC permit number or a copy of the Industrial NOI form for each facility will be included. The list of municipally owned, or operated, facilities and stormwater controls will be maintained and available for review by the permitting authority.
4.2.6.2	Municipally-owned or operated facility assessment:
4.2.6.2.1	Comprehensive assessment of pollutant discharge potential:
	The City of North Charleston developed a comprehensive assessment of all City-owned or operated facilities identified in Part 4.2.6.1 and will include it in the permit reapplication for their potential to discharge pollutants in stormwater.

4.2.6.2.2	Identification of high priority facilities:
	The City of North Charleston identified "high-priority" facilities that have a high potential to generate stormwater pollutants.
4.2.6.2.3	Documentation of comprehensive assessment results:
	The City of North Charleston will document the results of the assessments and maintain copies of all site evaluation checklists used to conduct the comprehensive assessment. The documentation will include the results of City of North Charleston's initial assessment, any identified deficiencies and corrective actions taken.
4.2.6.3	Annual comprehensive inspections of high priority facilities:
	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 the City of North Charleston. 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 the City of North Charleston. The inspection report will also include any identified deficiencies and the corrective actions taken to fix the deficiencies.
4.2.6.4	Storm Sewer System Maintenance Activities – MS4 Maintenance:
4.2.6.4.1	Assessment/prioritization of MS4 catch basins:
	The City of North Charleston will prioritize their owned and /or operated stormwater management systems / structures and implement a maintenance schedule.
4.2.6.4.2	Municipal activities and operation:
	The City of North Charleston will 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.
4.2.6.4.3	Maintenance of municipally-owned and/or maintained structural stormwater controls:
	The City of North Charleston will inspect, and maintain, wherever and whenever necessary, all City-owned or maintained structural stormwater controls. The City of North Charleston will also maintain all municipally owned green infrastructure practices through regularly scheduled maintenance activities.

4.2.6.5	Employee Training and Education Requirements:
	The City of North Charleston will develop an annual employee training program for appropriate employees involved in implementing pollution prevention and good housekeeping practices. This annual training will include a general stormwater education component, any new technologies, operations, or responsibilities that arise during the year, and the SMS4 general permit requirements that apply to the staff being trained. A description of how the program will be maintained for review by the permitting authority. The City of North Charleston will also identify and track all personnel requiring training and records must be maintained. Training will begin within the first year from the effective date of permit authorization.
4.2.6.6	Requirements for Contractor Oversight:
	Contractors hired by the City of North Charleston to perform municipal maintenance activities will be contractually required to comply with all of the City of North Charleston's stormwater control measures, good housekeeping practices, and facility-specific stormwater management procedures. The City of North Charleston will provide oversight of contractor activities to ensure that contractors are using appropriate control measures and procedures.

4.2.6.2 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. In order to meet the requirements of Minimum Measure #6, the City of North Charleston will:

- Develop a Municipal Facility Inventory
- Conduct Assessment of Non-Permitted Municipal Facility & Identify High Priority Facilities
- Conduct High Priority Facility Inspections
- Prioritize stormwater management systems/structures
- Develop and Implement Pollution Prevention Measures for Operation and Maintenance Activities
- Inspect and Maintain City-Owned Structural Controls (stormwater BMPs)
- Conduct Pollution Prevention and Good House Keeping Employee Training

Table 16 describes the components of the North Charleston's pollution prevention/good housekeeping for municipal operations program:

Table 16: Best Management Practices – Minimum Measure #6

POLLUTION PREVENTION / GOOD HOUSEKEEPING BMPS			
Municipal Facility Inventory	Not Started: ☐ In Progress : ☐ Completed: ☒		
	Section: 4.2.6.1.1		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Update the inventory of all City -owned facilities and stormwater controls that are not covered under a separate NPDES permit. In addition, include a list of all municipally owned facilities that are covered under a separate NPDES industrial permit.	December 31, 2014	Once during the permit term	Public Works Department
Measurable Goal:			
• An inventory of non-permitted municipal facilities.			
• A list of all municipally owned facilities that are covered under a separate NPDES permit.			
Measurable Goal Update:			
• The City of North Charleston maintains a list of all City-owned facilities that are not covered under a separate NPDES permit.			
• The City of North Charleston also maintains a list of City-owned facilities with their own NPDES permit.			
Assessment of Non-Permitted Municipal Facilities	Not Started: ☐ In Progress : ☐ Completed: ☒		
	Section: 4.2.6.2		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Conduct an analysis based on type of facility/use, locations to waterbody, City owned BMPs to rank City facilities.	July 1, 2015	Once during permit term	Public Works Department
Based on the results of the analysis, identify potential high priority facilities.	July 1, 2015	Once during permit term	Public Works Department
Create a site evaluation checklist that will be used to conduct an assessment of all facilities.	July 1, 2015	Once during permit term	Public Works Department
Conduct and document facility site inspections with evaluation checklist at each facility identified in the inventory from Section 4.2.6.1.	December 31, 2018	Once during permit term	Public Works Department
Measurable Goal:			
• A site evaluation checklist for facility assessment.			
• Conduct inspections at municipal facilities and complete site evaluation checklist.			
• Documentation of site evaluation checklists.			
• A list of high priority facilities.			

Measurable Goal Update:

- The City of North Charleston has completed an analysis to identify potential high priority facilities.
- The City of North Charleston has developed a site evaluation checklist. Conducting and documenting facility site inspections is an ongoing effort for the City.

Conduct High Priority Facility Inspections	**Not Started:** ☐ **In Progress :** ☐ **Completed:** ☒ **Section: 4.2.6.3**		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Create inspection report template with sections for identified deficiencies and corrective action taken for each site inspection.	December 31, 2015	Once during permit term	Public Works Department
Conduct facility site inspections including evaluations of potential "pollutant generating" areas.	Throughout Permit Term Beginning in Year 3 (January 1, 2016)	Annual	Public Works Department
Document inspection reports.	January 1, 2018	Annual	Public Works Department

Measurable Goal:

- A high priority facility inspection report form.
- Conduct inspections and determine potential "pollutant generating" areas at high priority facilities.
- Documentation of facility inspection report forms.

Measurable Goal Update:

- The City of North Charleston has developed an inspection report template.
- The City regularly conducts facility inspections and documents the reports and findings.

Prioritize MS4 Stormwater Management Systems/Structures	**Not Started:** ☐ **In Progress :** ☒ **Completed:** ☐ **Section: 4.2.6.4.1**		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Prioritize stormwater management systems / structures.	March 1, 2015	Once during permit term	Public Works Department
Implement a maintenance schedule for stormwater management systems/structures.	May 1, 2015	Once during permit term	Public Works Department

Measurable Goal:

- A schedule to maintain the stormwater management system.

Measurable Goal Update:

- The City of North Charleston currently implements a maintenance schedule based on a prioritized stormwater management system. The City is currently updating their priority and maintenance schedule to improve effectiveness and efficiency. This is an on-going effort for the City.

Develop and Implement Pollution Prevention Measures for Operation and Maintenance Activities	Not Started: ☐ In Progress : ☐ Completed: ☒ Section: 4.2.6.4.2		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Develop a written set of pollution prevention measures for municipal operation and maintenance activities.	December 31, 2014	Once during permit term	Public Works Department
Implement pollution prevention measures for municipal operation and maintenance activities.	June 1, 2015	Throughout permit term	Public Works Department
Measurable Goal:			
• A written set of pollution prevention measures for operation and maintenance activities.			
Measurable Goal Update:			
• The City of North Charleston implements a written set of pollution prevention measures for municipal operation and maintenance activities.			

Inspect and Maintain City-Owned Structural Controls	Not Started: ☐ In Progress : ☐ Completed: ☒ Section: 4.2.6.4.3		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Create a structural control inspection and maintenance form.	December 31, 2014	Once during permit term	Public Works Department
Conduct inspections for City-Owned structural controls.	April 31, 2015	Annually	Public Works Department
Perform necessary maintenance for City-Owned structural controls.	December 31, 2015	Annually	Public Works Department
Measurable Goal:			
• A structural control inspection and maintenance form.			
• Conduct inspections for City-Owned structural controls.			
• Conduct maintenance for City-Owned structural controls.			
• Documentation of completed inspection and maintenance forms.			
Measurable Goal Update:			
• The City of North Charleston has developed a structural control inspection and maintenance form. The City conducts inspections and performs maintenance as necessary. This is an ongoing effort for the City.			

Conduct Pollution Prevention and Good House Keeping Employee Training	Not Started: ☐ In Progress : ☐ Completed: ☒ Section: 4.2.6.5		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Develop an annual employee training program for appropriate employees involved in implementing pollution prevention and good housekeeping practices. Include training for IDDE.	December 31, 2014	Once during permit term	Public Works Department

Conduct pollution prevention and good house keeping training.	Start-up deadline: January 1, 2015	Annually	Public Works Department
Create a list of employees that have been identified for pollution prevention training.	December 31, 2014	Annually	Public Works Department
Measurable Goal:			
• A written pollution prevention employee training plan/program.			
• A list of employees participating in the training program.			
Measurable Goal Update:			
• The City of North Charleston conducts training for employees involved in implementing pollution prevention and good housekeeping practices. This training is conducted with IDDE training.			
Implement Contractor Oversight	**Not Started: ☐ In Progress : ☐ Completed: ☒**		
	Section: 4.2.6.6		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Require contractors hired by the City of North Charleston to perform municipal maintenance activities to be contractually required to comply with all of the SMS4 stormwater control measures, good housekeeping practices, and facility-specific stormwater management procedures.	December 31, 2014	Throughout permit term	Public Works Department
Provide oversight of contractor activities to ensure that contractors are using appropriate control measures and procedures.	December 31, 2014	Throughout permit term	Public Works Department
Measurable Goal:			
• Provide oversight of contractor activities.			
Measurable Goal Update:			
• The City of North Charleston provides contractor oversight to ensure compliance with permit requirements.			

4.5 Reviewing and Updating Stormwater Management Programs

Table 17: SWMP Requirements

SWMP REQUIREMENTS			
Update Stormwater Management Plan	**Not Started: ☐ In Progress : ☒ Completed: ☐**		
	Section: 4.5.1 & 4.5.2		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Review and revise the SWMP document to keep it up to date during the term of the permit.	December 31, 2018	Annually	Public Works Department
Stormwater Management Plan Updates Required by SCDHEC	**Not Started: ☐ In Progress : ☒ Completed: ☐**		
	Section: 4.5.3		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
SCDHEC requested changes to the SWMP.	December 31, 2018	As Required	Public Works Department

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 general SMS4 permit, additions (but not subtracting or replacing) components to the SWMP will be made at any time with a written notification made to SCDHEC.

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

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

Additionally, SCDHEC may request the City of North Charleston to make changes to the SWMP at any time to:

- Address documented impacts on receiving water quality caused, or contributed to, by discharges from the SMS4;
- Include more stringent requirements necessary to comply with new Federal statutory or regulatory requirements; or
- Include such other conditions deemed necessary by the Department to comply with the goals and requirements of the Clean Water Act.

- Changes requested by SCDHEC must be made in writing, set forth the time schedule for the City to develop the changes, and offer the City the opportunity to propose alternative program changes to meet the objective of the requested modification. All changes required by SCDHEC will be made in accordance with South Carolina Water Pollution Control Permits Regulation 61-9 124.5, 122.62, or as appropriate 122.63.

5.3 Reporting

Table 18: Reporting

REPORTING			
1st Report	**Not Started: ☐ In Progress : ☐ Completed: ☒**		
	Section: 5.3		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Complete and Submit 1st Report (covering years 1 and 2).	April 01, 2016	Once	Public Works Department
2nd Report	**Not Started: ☒ In Progress : ☐ Completed: ☐**		
	Section: 5.3		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Complete and Submit 2nd Report (covering years 3 and 4).	July 4, 2018	Once	Public Works Department
3rd Report	**Not Started: ☐ In Progress : ☐ Completed: ☒**		
	Section: 5.3		
Milestone(s)	**Schedule**	**Frequency**	**Responsible Party**
Complete and Submit 3rd Report (covering years 5 and 6).	April 1, 2020	Once	Public Works Department

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 re-notification.

3. While, and if the expired permit is continued, reports are due every year on the anniversary date of the expired permit.

4. SCDHEC released a letter, dated December 3, 2019, indicating that the 3rd annual report should be due to April 2, 2020, and shall cover years 2018 and 2019. The letter also indicated that the annual report and associated appendices, including the updated SWMP, shall be submitted electronically. The City of North Charleston complied with this letter.

The permit indicates that all reports shall be sent to the address below unless the Department instructs permittees to submit via alternate mechanisms (i.e. electronic mechanisms):

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

All reports will include:

- The status of the City of North Charleston'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 program at reducing the discharge of pollutants to the MEP;

- A summary of the stormwater activities the City plans to undertake during the next reporting cycle (including an implementation schedule);

- Proposed changes to the City's SWMP, including changes to any BMP or any identified measurable goals that apply to the program elements; and

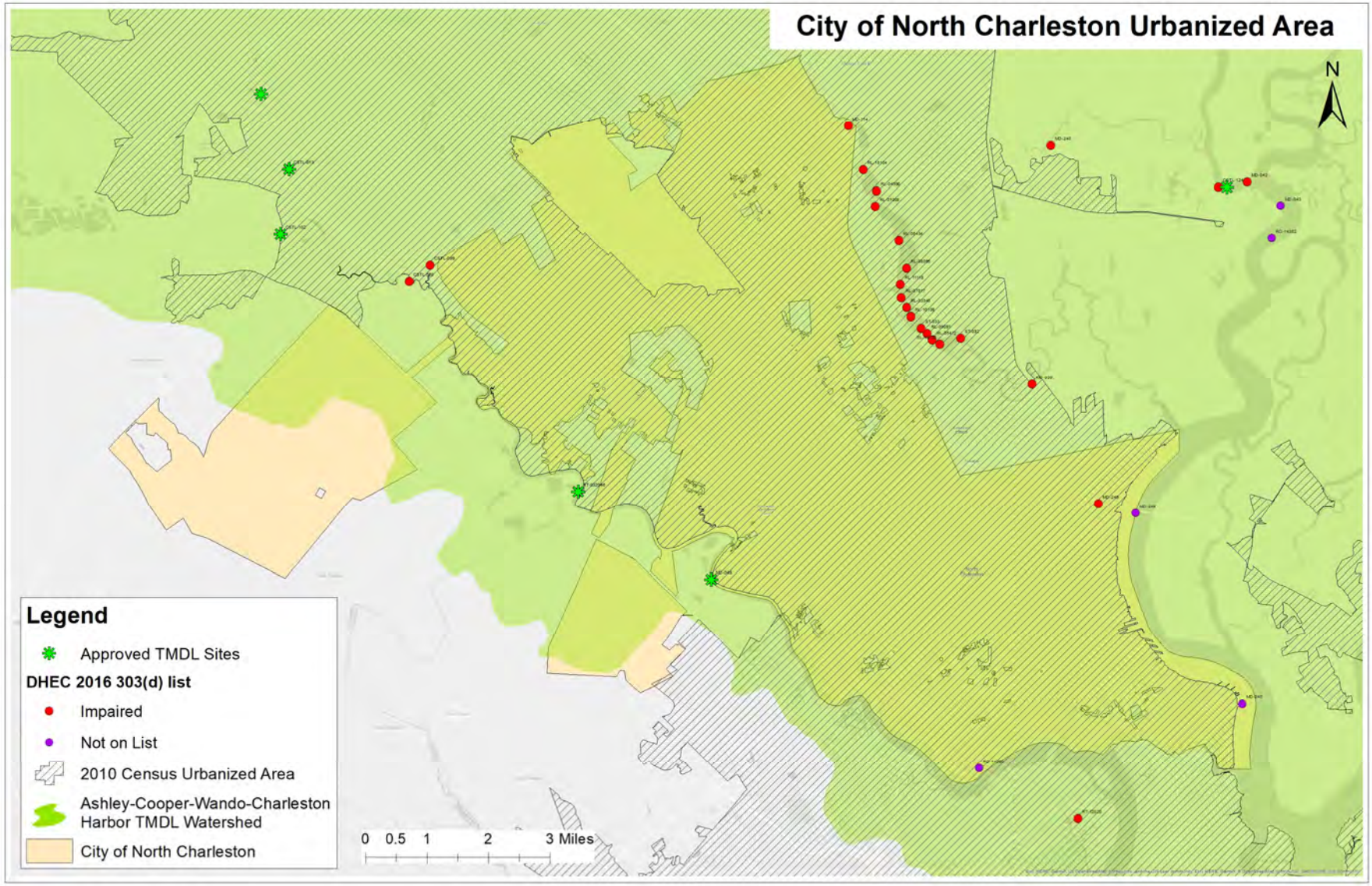
- Notice that the City of North Charleston is relying on another entity to satisfy some of the City's permit obligations (if applicable).

- Information requested in the SMS4 general permit including, but not limited to: sections 1.4.7, 3.1.1.1, 3.2.1.1, 3.2.1.2.2, 3.3.6, 4.1.6 and in the additional conditions applicable to NPDES MS4 permits contained in Appendix B of the SMS4 general permit.

Appendix A
City of North Charleston
Revisions Sheet

Date	Description of Update or Revision
March 2016	Updates to the Minimum Measure tables to reflect the current status of each milestone.
	Interim dates that were not set by the permit were adjusted, if needed.
	The impaired stations list was updated from the 2012 303(d) list to the 2014 303(d) list. The changes that were made are listed in the 2016 Annual Report and are reflected in the current SWMP.
	The TMDL list was verified at the time of the 2016 Annual Report.
	The City of North Charleston Urbanized Area map was updated to reflect annexations at the time of the 2016 Annual Report.
March 2020	Updates to the Minimum Measure tables to reflect the current status of each milestone.
	The impaired stations list was updated from the 2014 303(d) list to the 2016 303(d) list. No changes were necessary.
	The TMDL list was verified at the time of the 2020 Annual Report.
	The City of North Charleston Urbanized Area map was updated to reflect annexations at the time of the 2020 Annual Report.
	The SWMP was updated to include a reference to the SCDHEC letter regarding annual reporting requirements following the permit expiration.

Appendix B
City of North Charleston
Urbanized Area


City of North Charleston Urbanized Area
N
Legend
Approved TMDL Sites
DHEC 2016 303(d) list
Impaired
Not on List
2010 Census Urbanized Area
Ashley-Cooper-Wando-Charleston Harbor TMDL Watershed
City of North Charleston
0 0.5 1 2 3 Miles

Appendix C
TMDL Monitoring and Assessment Plans

The City of North Charleston is not required to develop a TMDL Monitoring and Assessment Plan

Appendix D
City of North Charleston
Stormwater Management Ordinance

Available here: https://northcharleston.org/wp-content/uploads/stormwater_ordinance_2007-056.pdf

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

Standard Operating Procedures For Use In Field Investigations For Illicit Discharges

North Charleston Public Works
Public Works Department

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Tables and Figures

Appendix

1. INTRODUCTION

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

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

1.1 Permit Requirements

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

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

The table below outlines the NPDES MS4 Phase II permit requirements.

Table 1. PERMIT REQUIREMENTS – Minimum Measure #3

Requirement Description
• Develop, implement and enforce a program to detect and eliminate illicit discharges.
• Develop a storm sewer system map showing the location of all outfalls and the names and location of all waters of the State that receive discharges from those outfalls.
• Prohibit non-stormwater discharges into your storm sewer system.
• Develop a program to identify and address non-stormwater discharges that significantly contribute pollutants to the MS4, such as illegal dumping.
• Inform public employees, businesses, and the general public regarding the impacts associated with illegal discharges and the improper disposal of waste.

1.2 Important Terminology and Key Concepts

Pollutants of Concern

The three illicit discharges most commonly found are as follows:

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

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

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

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

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

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

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

Allowable Discharges

Non-stormwater discharges (e.g. non-commercial or charity car washes, etc.) that discharge less than significant sources of pollutants to the MS4, due to either the nature of the discharges or because there are conditions the City of North Charleston has established for allowing these discharges to their MS4 (e.g., a charity car wash with appropriate controls on frequency, proximity to sensitive water bodies, BMPs on the wash water, etc.), are allowed. Significant contributors of pollutants to your MS4 are:

- 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
- springs
- water from crawl space pumps
- footing drains
- lawn watering
- individual residential car washing
- flows from riparian habitats and wetlands

- dechlorinated swimming pool discharges
- street wash water

Discharges or flows from fire fighting activities are excluded from the effective prohibition against non-stormwater and need only be addressed where they are identified as significant sources of pollutants to waters of the State.

Illicit Discharge

The term illicit discharge is defined in four parts.

1. Illicit discharges are defined as a storm drain that has measurable flow during dry weather containing pollutants and/or pathogens. A storm drain with measurable flow but containing no pollutants is simply considered a discharge.
2. Each illicit discharge has a unique frequency, composition and mode of entry in the storm drain system.
3. Illicit discharges are frequently caused when the sewage disposal system interacts with the storm drain system. A variety of monitoring techniques is used to locate and eliminate illegal sewage connections. These techniques trace sewage flows from the stream or outfall, and require going back up the pipes or conveyances to reach the problem connection.
4. Illicit discharges of other pollutants are produced from specific source areas and operations known as "generating sites." Knowledge about these generating sites can be helpful to locate and prevent non-sewage illicit discharges. Depending on the regulatory status of specific "generating sites", education, enforcement and other pollution prevention techniques may be the most appropriate way to manage this class of illicit discharges.

MS4

The City of North Charleston's MS4 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 (a) owned or operated by North Charleston; (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).

Source Identification

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

Discharge Frequency

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

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

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

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

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

Discharge Flow Types

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

- *Sewage and septage* flows are produced from sewer pipes and septic systems.
- *Washwater* flows are generated from a wide variety of activities and operations. Examples include discharges of gray water (laundry) from homes, commercial carwash wastewater, fleet washing, commercial laundry wastewater, and floor washing to shop drains.
- *Liquid wastes* refers to a wide variety of flows, such as oil, paint, and process water (radiator flushing water, plating bath wastewater, etc.) that enter the storm drain system.
- *Tap water* flows are derived from leaks and losses that occur during the distribution of drinking water in the water supply system. Tap water discharges in the storm drain system may be more prevalent in communities with high loss rates (i.e., greater than15%) in their potable water distribution system. (source of 15% is from National Drinking Water Clearinghouse)
- *Landscape irrigation* flows occur when excess potable water used for residential or commercial irrigation ends up in the storm drain system.
- *Groundwater and spring water* flows occur when the local water table rises above the bottom elevation of the storm drain (known as the invert) and enters the storm drain either through cracks and joints, or where open channels or pipes associated with the MS4 may intercept seeps and springs.

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

Mode of Entry

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

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

1. Sewage cross-connections: A sewer pipe that is improperly connected to the storm drain system produces a continuous discharge of raw sewage to the pipe. Sewage cross-connections can occur in catchments where combined sewers or septic systems are converted to a separate sewer system, and a few pipes get "crossed." Straight pipe: This term refers to relatively small diameter pipes that intentionally bypass the sanitary connection or septic drain fields, producing a direct discharge.

2. Industrial and commercial cross connections: These occur when a drain pipe is improperly connected to the storm drain system producing a discharge of wash water, process water or other inappropriate flows into the storm drain pipe. Older industrial areas tend to have a higher potential for illicit cross-connections.

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

1. Groundwater seepage into the storm drain pipe*:* Seepage frequently occurs in storm drains after long periods of above average rainfall. Seepage discharges can be either continuous or intermittent, depending on the depth of the water table and the season. Groundwater seepage usually consists of relatively clean water that is not an illicit discharge by itself, but can mask other illicit discharges. If storm drains are located close to sanitary sewers, groundwater seepage may intermingle with diluted sewage.

2. Spills that enter the storm drain system at an inlet: These transitory discharges occur when a spill travels across an impervious surface and enters a storm drain inlet. Spills can occur at many industrial, commercial and transport-related sites. A very common example is an oil or gas spill from an accident that then travels across the road and into the storm drain system.

3. Dumping a liquid into a storm drain inlet*:* This type of transitory discharge is created when liquid wastes such as oil, grease, paint, solvents, and various automotive fluids are dumped into the storm drain. Liquid dumping occurs intermittently at sites that improperly dispose of rinse water and wash water during maintenance and cleanup operations. A common example is cleaning deep fryers in the parking lot of fast food operations.

4. Outdoor washing activities that create flow to a storm drain inlet: Outdoor washing may or may not be an illicit discharge, depending on the nature of the generating site that produces the wash water. For example, hosing off individual sidewalks and driveways may not generate significant flows or pollutant loads. On the other hand, routine washing of fueling areas, outdoor storage areas, and parking lots (power washing), and construction equipment cleanouts may result in unacceptable pollutant loads.

5. Non-target irrigation from landscaping or lawns that reaches the storm drain system: Irrigation can produce intermittent discharges from over-watering or misdirected sprinklers that send tap water over impervious areas. In some instances, non-target irrigation can produce unacceptable loads of nutrients, organic matter or pesticides. The most common example is a discharge from commercial landscaping areas adjacent to parking lots connected to the storm drain system.

2. SUMMARY OF CITY IDDE PROCEDURES

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

2.1 Report of Potential Illicit Discharges to the Public Works Department

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

2.1.1 Outfall Screening

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

2.1.2 Internal Reporting

The Public Works Department also expects to find some potential illicit discharges through various City Departments (e.g. Law Enforcement, Public Works maintenance crews, etc.).

2.1.3 External Observation

City citizens, visitors, and others are also expected to notify the Public Works Department of some potential illicit discharges. Suspected illicit discharges can be reported to the Public Works office at 745-1026.

2.1.4 Watershed-Based Planning

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

2.2 Determination of Receiving System Owner

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

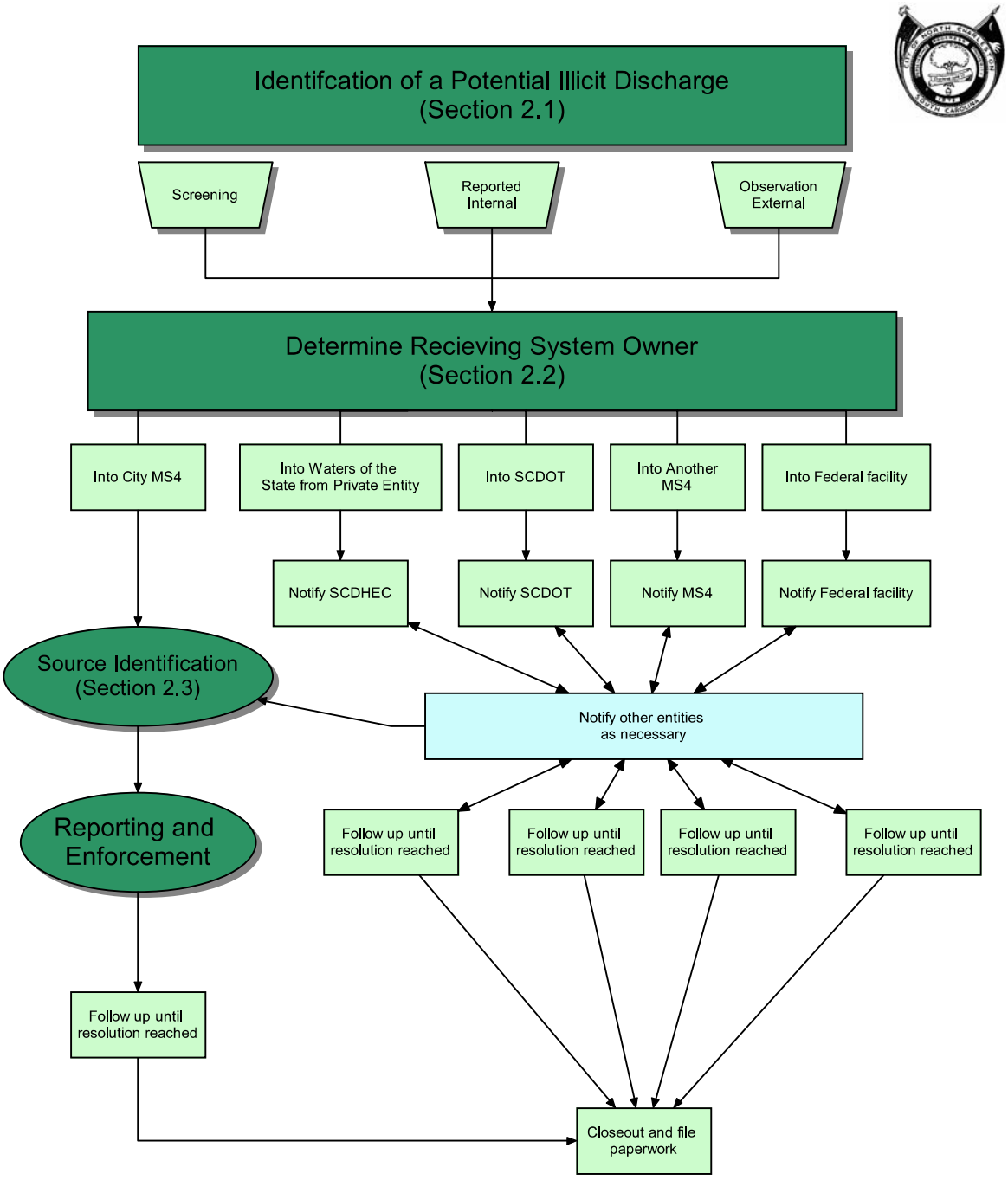
If the receiving system owner is the City, a Source Identification operation will begin to determine the source and if the discharge is truly an illicit, as defined in this manual (see Section 2.3). Enforcement procedures will be implemented if necessary, to include follow-up field visits.

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

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

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

Figure 1: Flowchart of the City of North Charleston's IDDE Program



2.2.1 Notification to Other MS4s, SCDHEC, and Federal Facilities

If the receiving system owner of the potential illicit discharge is not the City of North Charleston, then the Public Works Department will notify the determined owner through a letter. The list below provides contact information for the potential entities. If the potential illicit discharge is a Water of the State, SCDHEC-EQC is to be contacted.

Template notification letters are provided in Appendix C.

2.2.1.1 MS4s

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

Charleston County
4045 Bridge View Drive
North Charleston, SC 29405
(843) 202-7600
Chuck Jarmen

Berkeley County
223 N Live Oak Dr, Moncks Corner, SC
(843) 723-3800
Frank Carson

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

Town of Summerville
104 Civic Center
Summerville, SC 29483
(843) 875-8750
Russell Cornette

City of Hanahan
1255 Yeamans Hall Road
Hanahan, SC 29406
(843) 554-4221
Larry Sturdivant

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

2.2.1.2 Federal Facilities

Charleston Air Force Base
437 CES/CEV
100 W. Steward Avenue
Charleston AFB, SC 29404
(843) 963-2705
Charles Wannamaker

Charleston Naval Weapons Station
2316 Red Bank Road
Ste 100
Goose Creek SC 29445
843-764-4010
Mark Epstein

2.2.1.3 Discharges to Waters of the State

SCDHEC- EQC
2600 Bull Street
Columbia, SC 29201
(803) 896-8986

2.2.1.4 Follow-up Procedures

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

2.3 Illicit Source Identification

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

2.3.1 Potential Illicit Discharge Tracking

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

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

1. At an outfall in which a dry weather flow was found or at the initial point of discovery of the discharge, field crews will record physical data in GILware from visual inspections. Field crews should note algae, scum, solids, or oil sheen, as well as odor, color, flow depth and flow quantity. In general, the PTD (project file type) will guide the input of the needed information.

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

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

3. If the source is raw sewage, and this should be immediately apparent, tracking will hopefully lead to a determination of whether the source is a sanitary sewer system or a septic tank. If the source

is a sanitary sewer system,, a phone call should be placed as soon as possible to the proper sewer authority. Below is a list of potential contacts

Charleston Water Systems (CWS)
103 St. Philip Street
Charleston, SC 29403
(843) 727-6800
http://www.charlestonwater.com
North Charleston Sewer District
7225 Stall Rd.
North Charleston, SC 29406
(843) 764-3072
http://www.ncsd-sc.com/

Dorchester County Water and Sewer
2120 East Main Street
PO Box 9
Dorchester, SC 29437
(843) 832-0075 or (843) 563-0075

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

If the source is a septic system, SCDHEC-EQC should be contacted. See Section 2.2.1.3 for contact information.

4. Once the discharge has been tracked as far upstream as possible, the discharge should be sampled and analyzed to determine the pollutant levels and if the flow is truly an illicit discharge.

2.3.2 Illicit Discharge Detection

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

1. Obtain appropriate equipment and data from office assessment.

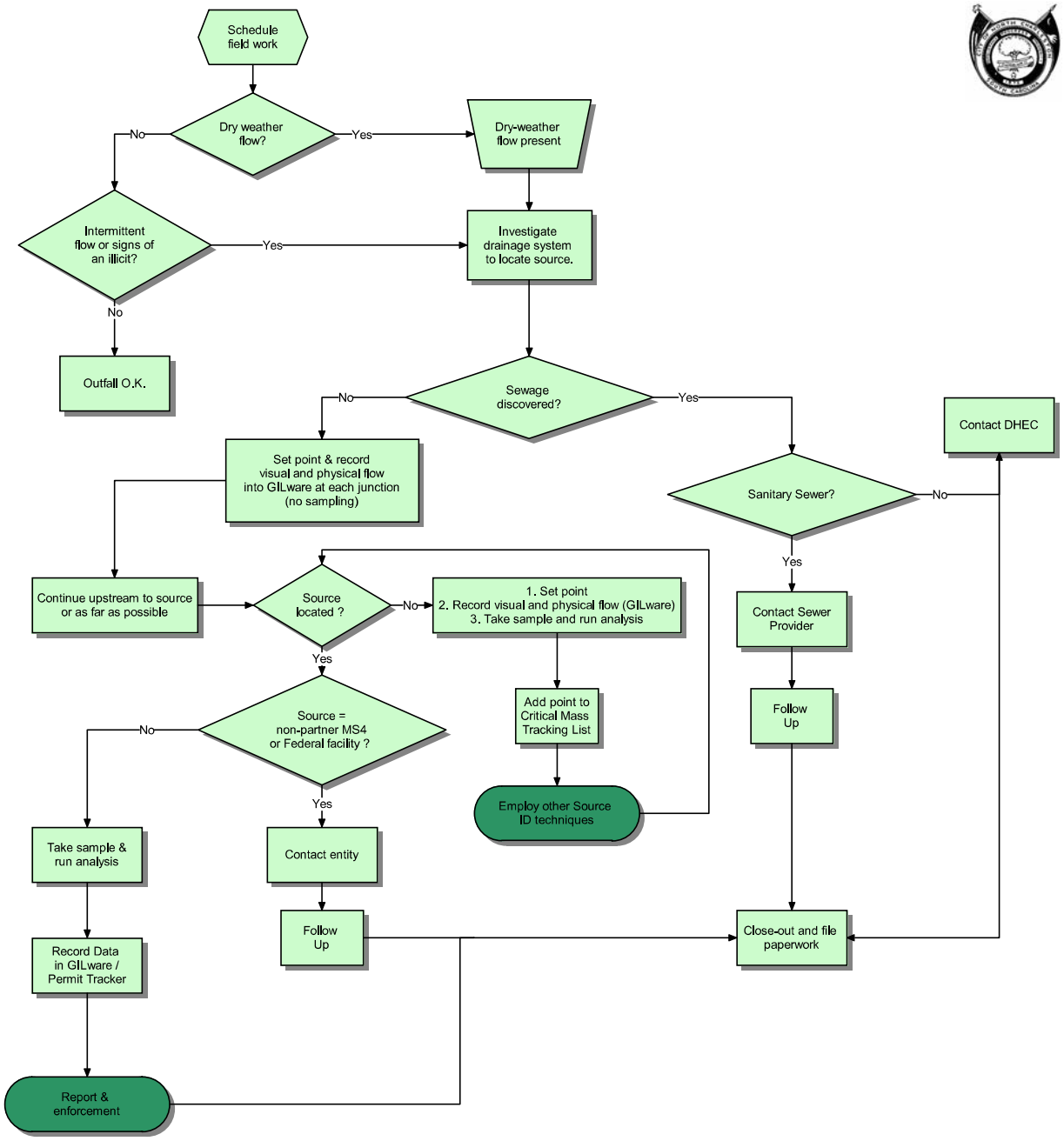
2. Make sure no rain has occurred in the last 72 hours and locations are inspected to the extent practicable during "dead low" to mid-incoming tides if the location is tidally influenced.

3. At the source of the illicit discharge or last accessible area with dry weather flow, place a point in GILware and record visual inspection information, and take the first grab sample, using a clean sample bottle. Procedures for collecting the sample are provided in Appendix B.

4. Perform the analysis of the sample taken for water temperature, pH, Total Chlorine, Total Copper, Surfactants/Detergents, and Phenols. Procedures for collecting the sample are provided in Appendix B. Record all analysis results in GILware.

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

Figure 2: Flowchart for Source Identification Procedures



5. Compare the analysis results to the allowable limits and note any exceedances of the limits of the various parameters set in Appendix A.

6. Go back to the sample location and take a second sample using another clean sample bottle. This should be taken no sooner than 6 hours from the previous sample time and no more than 24 hours after the first sample. Rerun the chemical analysis on this second sample. Record all analysis results in GILware.

7. If both sample analyses resulted in an exceedance of the limits in Appendix A for the same parameters, then the flow is considered an illicit. Begin enforcement procedures (see Section 2.3.4).

8. If either sample analysis contained an exceedance of the set limits, but not for the same parameter, then a third sample and analysis needs to be performed.

9. If two exceedances of the set limits were observed in any of the three sample analyses for any one parameter, then the flow is considered an illicit. Begin enforcement procedures (see Section 2.3.4).

2.3.3 Additional Illicit Tracking Efforts - Dry Weather Screening

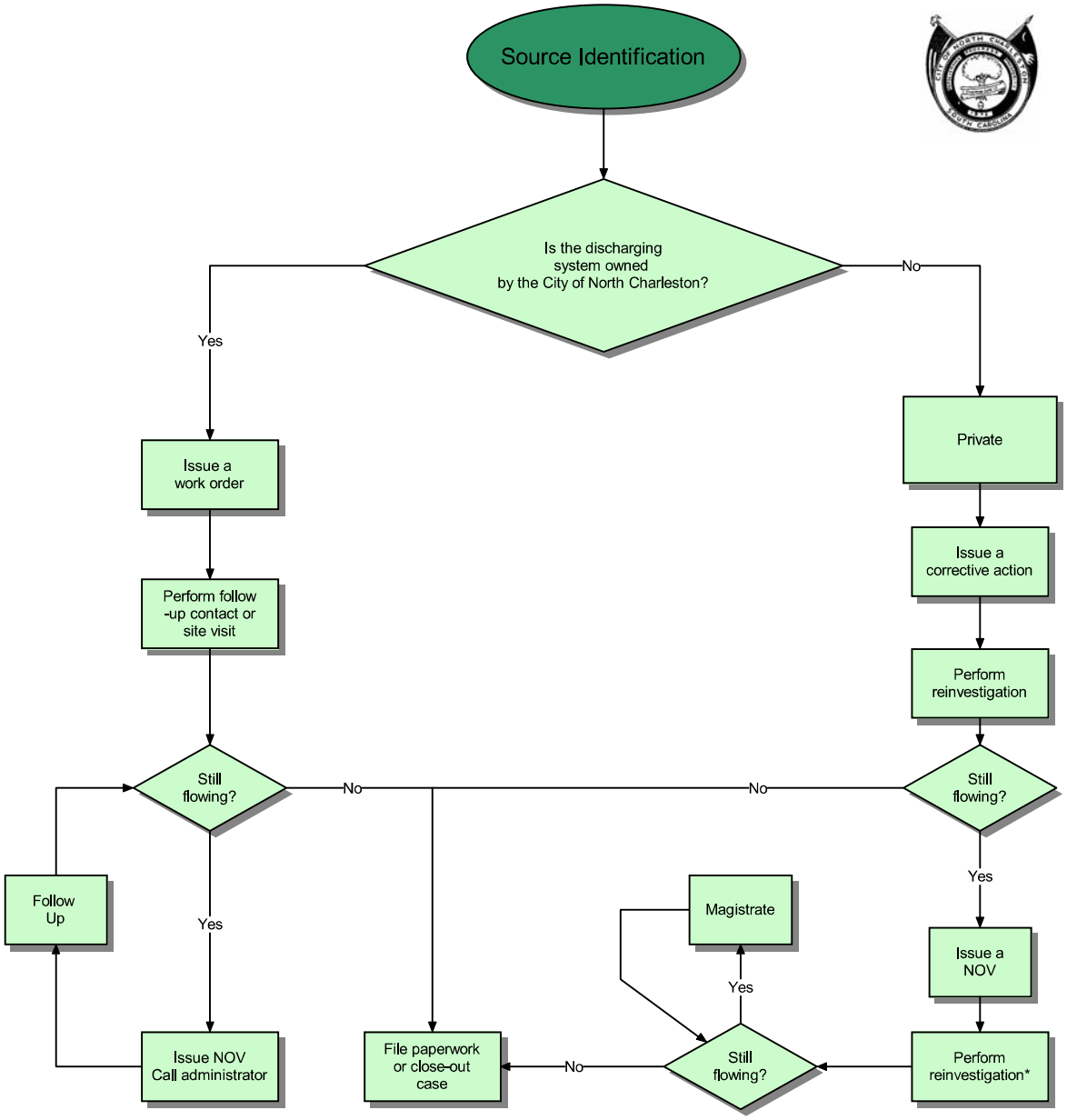
If a given discharge has been identified as an illicit, some additional illicit tracking options should be considered. These include the use of a crawler, tracer dyes, or smoke tests.

2.3.4 Reporting and Enforcement

Reporting and enforcement are the final steps to removing illicits. At this point, a discharge is known to be an illicit and the source has been positively identified or the discharge was tracked as far as possible. Procedures are split amongst the receiving system owner of the potential or determined illicit discharge.

Template notification letters are provided in Appendix C.

Figure 3: Flowchart of Reporting and Enforcement



2.3.4.1 Source = City of North Charleston MS4

The following steps outline the procedures to be conducted if the source is from a City/public facility.

1. Determine owner(s) contact information and generate corrective action letter discussing City illicit requirements.

2. Generate a report of sample analysis data (see Appendix C).

3. Submit letter and report to appropriate entity.

4. Copy letter and report to SCDHEC- EQC.

5. Schedule a follow-up visit to the site approximately 2 weeks later (or sooner if a hazardous condition warrants it) to determine if illicit discharge has been removed.

6. If flow is still present, issue a Notice of Violation (NOV) (see Appendix C) and schedule another follow-up visit.

7. If flow is still present after third visit, report case to Magistrate's office with all paperwork.

8. Once flow has been removed, file paperwork and close case.

2.3.4.2 Source = Private Property

If the illicit originates from a private owner or operation within the City of North Charleston, follow these steps.

1. Determine owner name(s) and address(s) and generate corrective action letter discussing City illicit requirements.

2. Generate a report of sample analysis data (see Appendix C).

3. Submit report to owner(s).

4. Schedule a follow-up visit to the site approximately 2 weeks later (or sooner if a hazardous condition warrants it) to determine if illicit discharge has been removed.

5. If flow is still present, issue a NOV (see Appendix C) and schedule another follow-up visit.

6. If flow is still present after third visit, report case to Magistrate's office with all paperwork.

7. Once flow has been removed, file paperwork and close case.

2.3.4.3 Source = Other MS4s or Federal Facilities

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

1. Determine owner name(s) and address(s) and generate corrective action letter discussing City illicit requirements.

2. Generate a report of sample analysis data (see Appendix C).

3. Submit report to entity. See Section 2.2.1 for contact information.

4. Schedule a follow-up phone call and/or site visit approximately 2 weeks later (or sooner if a hazardous condition warrants it) to determine if illicit discharge has been removed.

5. Continue step 4 until illicit resolved.

6. Once flow has been removed, file paperwork and close case.

Appendix A

Selection of Trace Parameters

A.1 Selection of Tracer Parameters

Chemical Parameters

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

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

pH

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

Copper

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

Phenols

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

Surfactants/Detergents

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

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

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

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

A.2 Physical Parameters

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

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

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

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

Floatables
Floatables are solids and liquids that float on the surface of the water. Floatables may include substances such as animal fats, food products, trash, oils, plant materials, solvents, foams, or gasoline. Floatables can often lead directly to the manufacturing process or other source of the illicit discharge.

A full description of the type and quantity of the floatables and a photograph of the discharge should be included in the report.

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

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

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

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

A.3 Further Descriptions of Physical Parameters

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

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

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

Table A.1: Interpretation of Physical Observation Parameters and Likely Associated Flow Sources	
Physical Observation Parameter	**Description**
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 refining facilities
Green:	Chemical plants, and textile facilities
Red:	Meat packers
Gray:	Dairies
Turbidity – Often affected by the degree of gross contamination. Dry-weather industrial flows with moderate turbidity can be cloudy, while highly turbid flows can be opaque. High turbidity is often a characteristic of undiluted dry-weather industrial discharges.	
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 refineries or storage facilities and vehicle service 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 service facilities and automobile dealers.
Damage to Outfall Structures – Another readily visible indication of industrial contamination. Cracking, deterioration, and spalling of concrete or peeling of surface paint, occurring at an outfall are usually caused by severely contaminated discharges, usually of industrial origin. These contaminants are usually very acidic or basic in nature. Primary metal industries have a strong potential for causing outfall structural damage because their batch dumps are highly acidic. Poor construction, hydraulic scour, and old age may also adversely affect the condition of the outfall structure which are not indications of upstream contaminating entries.	
Concrete cracking:	Industrial flows
Concrete spalling:	Industrial flows
Peeling paint:	Industrial flows
Metal corrosion:	Industrial flows

A.3.1 Treated Potable Water

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

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

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

A.3.2 Sanitary Wastewaters

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

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

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

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

Appendix B

Water Quality Sampling Procedures

B.1. Overview of Sampling Procedure

One-liter samples should be taken in clean Nalgene bottles.

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

B.2. Sampling Procedures

B.2.1 Prior to Starting Point Collection

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

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

pH Calibration Check (Prior to entering the field)

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

B.2.2 Grab Sampling

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

B.2.3 pH

1. Rinse the probe with DI water and dry gently by blotting with a tissue.
2. Immerse the pH probe into the sample, press the dispenser button once and then press the read button. Be careful not to let the probe touch the bottoms or sides of the sample container.
3. The meter will beep and a small padlock will appear on the screen when the pH and temperature are locked.
4. Rinse the probe with DI water and replace dust cover with pH buffer 7.00 on cotton ball in dust cover.
5. At the end of the day store the clean pH probe with dust cover in place.
   Operational Check: Once per sampling day, check the calibration against 7.0 pH, if the reading is not between 6.95 and 7.05 then you must recalibrate the meter.

B.2.4 Total Residual Chlorine

1. Enter the stored program number **80 ENTER** for total chlorine. The display will show **Dial nm to 530.**
2. Rotate the wavelength dial until the small display shows **530 nm.** When the correct wavelength is dialed in, the display will quickly show **Zero Sample** then **mg/L Cl_2.**
3. Rinse the chlorine sample cell with stormwater 3 times.
4. Fill the sample cell with 10 ml of stormwater.
5. Empty the contents of **one** total chlorine DPD reagent packet into the sample cell.
6. Stopper the sample cell and shake for 20 seconds. Remove the stopper.
7. Press SHIFT TIMER; a 3-minute reaction period will begin.
8. When the timer beeps, the display will show: **mg/L Cl_2.** Place a 10mL blank sample into the cell holder (be sure to wipe the outside of the sample cell with a kimwipes).
9. Press **Zero** and the display will show **Zeroing** … then **0.00 mg/L Cl_2.**
10. Within three minutes of the timer beeping, put the sample into the cell holder (be sure to wipe the outside of the sample cell with a kimwipe) and press **Read.** The display will show **Reading,** then the result in mg/L will be shown.
    ****Note:** DPD reagent packets deteriorate in the presence of moisture. The packets should be discarded if they have caked or turned brown.

B.2.5 Total Copper

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

11. Press **Read,** and the display will show **Reading**. Then the result in mg/L will be shown.

B.2.6 Total Phenols

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

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

B.2.7 Surfactants/Detergents

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

19. Place the blank, after wiping the outside of the sample cell with a kimwipes, into the cell holder and close the light shield.
12. Press **ZERO**. The display will show **Zeroing** … then **0.00 mg/L SURF.ANION**.
13. Place the prepared sample into the cell holder (after wiping the sample cell with kimwipes) and close the light shield.
14. Press **READ**. The display will show **Reading,** then the results in mg/L will be shown.

B.2.8 Cleaning Procedures

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

B.2.9 End of the Day

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

Appendix C

Reporting Forms

Jim Hutto
Director
Public Works Department

(843) 745 - 1026
Fax (843) 745 - 1099
1021 Aragon Street
North Charleston, SC 29405

Date:

Re: Final Notice of Violation Letter

Dear :

The purpose of this letter is to serve notice that you are in violation of North Charleston's Stormwater Management, Sediment and Erosion Control Ordinance at (list address or other positional information) due to an illicit discharge. North Charleston Public Works has determined through water sample analyses that a discharge from your property contains pollutants above acceptable levels. Add additional text.

Previous requests to you to remove the discharge have been unsuccessful. Therefore, the North Charleston Public Works Department has reported the violation to the Magistrate's office for further action.

If you have questions concerning this violation you can contact our office at 843-745-1026.

Add additional text

Sincerely,

Jim Hutto
Director
Public Works Department

(843) 745 - 1026
Fax (843) 745 - 1099
1021 Aragon Street
North Charleston, SC 29405

Date:

Re: Illicit Discharge Removal Letter

Dear :

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

Please find the attached report that provides greater detail on the investigation and 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 843-745-1026.

Add additional text as necessary.

Sincerely,

Jim Hutto
Director
Public Works Department

(843) 745 - 1026
Fax (843) 745 - 1099
1021 Aragon Street
North Charleston, SC 29405

Date:

Re: Illict Discharge Removal Letter

Dear :

The purpose of this letter is to inform you that the City of North Charleston 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 City's Stormwater Management Ordinance, and the City cannot therefore enforce its removal. However, the illicit discharge must be removed since it eventually finds its way into the City-owned system. Please find the attached report that provides greater detail on the investigation and results of water sample analyses. A copy of this letter and investigation report has also been sent to SCDHEC-EQC.

If you have questions concerning this violation you can contact our office at 843-745-1026.

Add additional text as necessary.

Sincerely,

Jim Hutto
Director
Public Works Department

(843) 745 - 1026
Fax (843) 745 - 1099
1021 Aragon Street
North Charleston, SC 29405

Date:

Re: Illicit Discharge Corrective Order

Dear :

The purpose of this letter is to serve notice that you are in violation of the City of North Charleston's Stormwater Management, Sediment and Erosion Control Ordinance at (insert address or other positional info) due to an illicit discharge. North Charleston Public Works has determined through water sample analyses that a discharge from your property contains pollutants above acceptable levels. Add additional text.

This violation is a first offense based on an inspection conducted on ?/?/2009. The North Charleston Public Works Department requests that you promptly remove the illicit discharge before additional action is taken. North Charleston Public Works personnel will revisit the location of the illicit discharge in approximately two weeks (or sooner if a hazardous condition warrants it) to see if you have removed it.

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 843-745-1026.

Add additional text as necessary.

Sincerely,

Jim Hutto
Director
Public Works Department

(843) 745 - 1026
Fax (843) 745 - 1099
1021 Aragon Street
North Charleston, SC 29405

Date:

Re: Notice of Violation

Dear :

The purpose of this letter is to serve notice that you are in violation of North Charleston's Stormwater Management, Sediment and Erosion Control Ordinance at (list address or other positional information) due to an illicit discharge. North Charleston Public Works has determined through a water sample analysis that a discharge from your property contains pollutants above acceptable levels. Add additional text.

This violation is due to failure to comply with a past corrective order and an inspection conducted on ?/?/2009. The City of North Charleston Public Works Department requests that you promptly remove the illicit discharge before additional action is taken. North Charleston Public Works personnel will revisit the location of the illicit discharge in approximately two weeks to see if you have removed it..

Comment [p1]: 1 or 2 weeks

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 843-745-1026.

Add additional text

Sincerely,

Appendix D

Additional Illicit Tracking Procedures

Illicit discharges are not uniformly distributed across a community, but tend to be clustered within certain land uses, subwatersheds, and sewage infrastructure areas. The office procedures 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. The desktop assessment also provides insight on how to narrow your illicit discharge search, and is helpful when designing a discharge tracking system to best suit your needs. The desktop assessment method has five basic elements:

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

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

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

D.1 Data Collection & Development

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

Table D.1: Useful Data for the Desktop Assessment		
	Data	**Likely Format**
Recommended	Aerial photos or orthophotos	Digital
	Subwatershed or catchment boundaries	Digital
	Hydrology including piped streams	Digital
	Land use or zoning	Digital or hardcopy map
	NPDES stormwater permittees	Digital data or map
	Outfalls	Digital
	Sewer system, 1" = 200' scale or better	Digital
	Standard Industrial Classification codes for all industries	Digital or hardcopy data
	Strom drain system, 1" = 200' scale or better	Digital
	Street map or equivalent GIS layers	Digital
	Topography (5 ft contours or better)	Digital
Optional	Age of development	Narrative data
	As-builts or construction drawings	Hardcopy map
	Condition of infrastructure	Narrative data
	Field inspection records	Hardcopy or digital data
	Depth to water table and groundwater quality	Digital data or maps
	Historical industrial uses or landfills	Narrative data or hardcopy map
	Known locations of illicit discharges (current and past)	Narrative data or digital map
	Outfall and stream monitoring data	Digital data
	Parcel boundaries	Digital or hardcopy map
	Pollution complaints	Narrative data
	Pre-development hydrology	Narrative data or hardcopy map
	Sanitary sewer infiltration and inflow surveys (I/I)	Hardcopy or digital data
	Septic tank locations or area served by septic systems	Hardcopy or digital map
	Sewer system evaluation surveys	Hardcopy or digital data

D.1.1 Outfall Catchment Areas

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

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

D.2 Mapping

Once subwatersheds or catchments are delineated, the City of North Charleston should begin to acquire and compile existing data for each drainage area. This will allow for the analyses and manipulation of spatial data, update and creation of data layers, and addition of attribute data with

each map layer. Maps created in GIS can help manage the entire IDDE program and demonstrate compliance in annual reports. The maps are also very useful to help communicate with the public.

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

D.2.1 Mapping and Preliminary Watershed Evaluation

The data collected during the mapping process is important as it forms the basis for the rest of the more detailed field investigations. Maps with information such as watershed boundaries and land usage can help to provide a basis to prioritize the outfalls and watersheds by potential to contribute non-stormwater entries into the storm drainage system. When preparing the maps, full advantage should be taken of any existing and available information, specifically data listed in Table D.1. The receiving waters and stormwater drainage outfalls must be identified and accurately located on the appropriate maps. Possible sources of documented information include:

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

D.3 Prioritization

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

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

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

- High – problems are suspected to be severe throughout the subwatershed.

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

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

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

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

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

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

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

Land Use and Potential Generating Sites

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

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

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

Industrial Generating Sites: Industrial sites produce a wide range of flows that can cause illicit discharges. The most common continuous discharges are operations involving the disposal of rinse

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

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

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

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

Land Use	Generating Site	Activity that Produces Discharge
Residential	• Apartments • Multi-family • Single Family Detached	• Car Washing • Driveway Cleaning • Dumping / Spills (e.g. leaf litter and RV/boat holding tank effluent • Equipment Washdowns • Lawn/Landscape Watering • Septic System Maintenance/Overflow • Swimming Pool Discharges
Commercial	• Campgrounds/RV parks • Car Dealers/Rental Car Companies • Car Washes • Commercial Laundry / Dry Cleaning • Gas Stations/ Auto Repair Shops • Marinas • Nurseries and Garden Centers • Oil Change Shops • Restaurants • Swimming Pools	• Building Maintenance (power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Vehicle Fueling • Vehicle Maintenance / Repair • Vehicle Washing • Washdown of greasy equipment and grease traps
Industrial	• Auto recyclers • Beverages and brewing • Construction vehicle washouts • Distribution Centers • Food processing • Garbage truck washouts • Marinas, boat building and repair • Metal plating operations • Paper and wood products • Petroleum storage and refining • Printing	• All commercial activities • Industrial process water or rinse water • Loading and un-loading area washdowns • Outdoor material storage (fluids)
Institutional	• Cemeteries	• Building Maintenance (e.g. power washing)

	• Churches • Corporate Campuses • Hospitals • Schools and Universities	• Dumping/Spills • Landscaping/Grounds Care (irrigation) • Parking Lot Maintenance (power washing) • Vehicle Washing
Municipal	• Airports • Landfills • Maintenance Depots • Municipal Fleet Storage Areas • Ports • Public Works Yards • Streets and Highways	• Building Maintenance (e.g. power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Road Maintenance • Spill Prevention/Response • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing

Preventing Illicit Discharges / Resolution

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

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

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

- All municipalities (MS4s) – send letter to appropriate city / county's department
- Non MS4s – Send letter to appropriate department and to SCDHEC
- Private Citizens, Charleston Airport, and US Navy send a letter to the appropriate party and to SCDHEC

Table D.4: Pollution Causing Activities		
Activity	**Pollutant**	**Resolution / Prevention**
Car Wash	• Surfactants / detergents • Oil and grease • Metals • Xylene	• Nozzles with shut off valves • Storm drain plug and wet vacuum provisions for charity carwash events • Water bill inserts promoting environmentally safe car washing products • Promote car wash on grass vs. pavement or in the street • Require a permit • include a kit of environmental safe soap, etc.
Driveway Cleaning / Parking log maintenance	• Oil and grease • Chemicals • Hydrocarbons • Ethylene glycol	• Installation and maintenance of filters
Lawn / Landscape Watering and Maintenance	• Fecal coliform • Sediment • Nutrients	• Public education indicating importance of site specific application rather than broad casting pesticides, herbicides and fertilizers • Signs and public pet waste bags with disposal cans
Swimming Pool Discharges	• Chlorine • Back flush water	• Educational kiosks at retail outlets selling chemicals • Changes in local plumbing codes to require discharge to sanitary sewer systems
Building Maintenance (power-washing)	• Oil and Grease • Chemicals • Fecal coliform	• Educational brochures
Dumping / Spills	• Hydrocarbons, • Oil and grease • Metals • Xylene • Ethylene glycol	• Community recycling centers • Pollution hotlines • Fines • Outreach material at auto parts stores
Vehicle Fueling	• Oil and Grease • Hydrocarbons • Xylene	• Educational posted signs at fueling stations • Fueling area must be covered
Vehicle Maintenance / Repair	• Oil and Grease • Hydrocarbons • Ethylene glycol	• Outreach materials at auto parts stores and service stations • Community oil recycling stations • Directories of used oil collection stations • Pollution hotlines

Activity	Pollutant	Resolution / Prevention
Outdoor Fluid Storage	• Oil and Grease • Hydrocarbons	• Posted signs of potential hazard • Covered with secondary containment
Road Maintenance	• Hydrocarbons • Oil and Grease • Trash and pollution	• Education information
Septic System Maintenance/Overflow	• Surfactants • Fecal coliform	• Water bill inserts informing the need for routine visual inspections
Loading and Unloading Areas	• Oil and Grease • Hydrocarbons	• Spill prevention and response training • Identification of potential spill areas • Inventory of harmful materials • Employee training
Industrial Process Water / Rinse Water	• Temperature • Surfactants • Phenols • Chlorine	• Business outreach and education • Spill prevention and response training • Employee training • Site inspections

Appendix F
Enforcement Response Plan

ENFORCEMENT RESPONSE PLAN

(ERP)

The City of North Charleston

South Carolina

December 2014

ENFORCEMENT RESPONSE PLAN
The City of North Charleston
South Carolina

Table of Contents

I. INTRODUCTION

This Enforcement Response Plan (ERP) document was developed as a guidance manual for identifying specific violation types and defining the City of North Charleston's response to violations of the Stormwater Management Ordinance of the City of North Charleston (2007-056), the City of North Charleston Stormwater Program Permitting Standards and Procedures 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 City.

Upon determination that a violation of any provisions of the City Ordinance, the City permit or the approved stormwater management plan has occurred, the City may choose to assess and make a written demand for payment of a Civil Penalty. In addition to any applicable Civil Penalties:

- Any person(s) or entity that negligently or intentionally violates any provision of the above shall be guilty of a misdemeanor and shall be punished within the jurisdictional limits of the municipal court.
- The City of North Charleston may withhold the release of permanent electric power to the site.
- The City of North Charleston may withhold or revoke permits related to the site.
- If the City of North Charleston has to perform corrective action(s) due to continued non-compliance, then the costs incurred as a result of such action(s) shall be reimbursed to the City of North Charleston by the owner or operator.
- If the City of North Charleston 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 responsible party who caused such violation(s) to occur, then the City of North Charleston may pass through the penalty and cost of compliance to that person(s) or responsible party.

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

II. ENFORCEMENT ACTION DEFINITIONS

Correction Order:

(City of North Charleston Stormwater Permitting Standards and Procedures Manual Sec. 4.3.1)

The Correction Order is a written or verbal notice for first offenses of non-compliance with the City Ordinance, the City permit 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 City taking further action to get a problem resolved.

Notice of Violation (NOV):

(City of North Charleston Stormwater Management Ordinance Sec. 6.1)

The Notice of Violation is a written notice which serves as a legal requirement to remove the violation(s) to the City Ordinance, the City permit or the approved stormwater management plan. It shall include the nature of the violation, proposed penalty, required corrective actions, time period for correcting the violation(s), and notification that a Stop Work Order may be issued or other permits may be suspended or revoked, if there is continued non-compliance.

Stop Work Order:

(City of North Charleston Stormwater Management Ordinance Sec. 6.6)

A Stop Work Order may allow or require correction of NOV issues, but shall otherwise stop all construction related activities. 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.

Civil Penalty:

(City of North Charleston Stormwater Management Ordinance Sec. 6.2)

Any person violating any provision of the City Ordinance, the City permit or approved stormwater management plans shall be subject to a Civil Penalty of not more than one thousand dollars ($1,000) for each violation. Each day of a violation constitutes a new and separate violation.

Criminal Penalty:

(City of North Charleston Stormwater Management Ordinance Sec. 6.4)

In addition to any applicable Civil Penalties, any person(s) or responsible party who willfully, with wanton disregard, or intentionally violates any provision of the Stormwater Management Ordinance shall be guilty of a misdemeanor and punished within the jurisdictional limits of the municipal court. Each day of a violation shall constitute a new and separate offense.

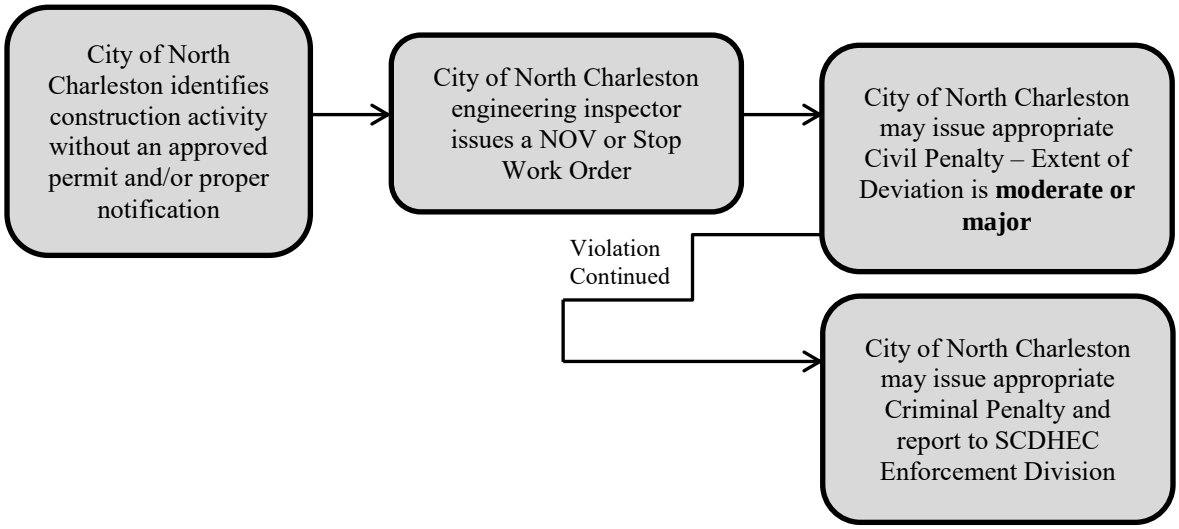
III. VIOLATION CATEGORIES

A. Construction/Permitting Violations

1. Initiation of construction activity without a site development/land disturbing/grading permit.

The City of North Charleston response:

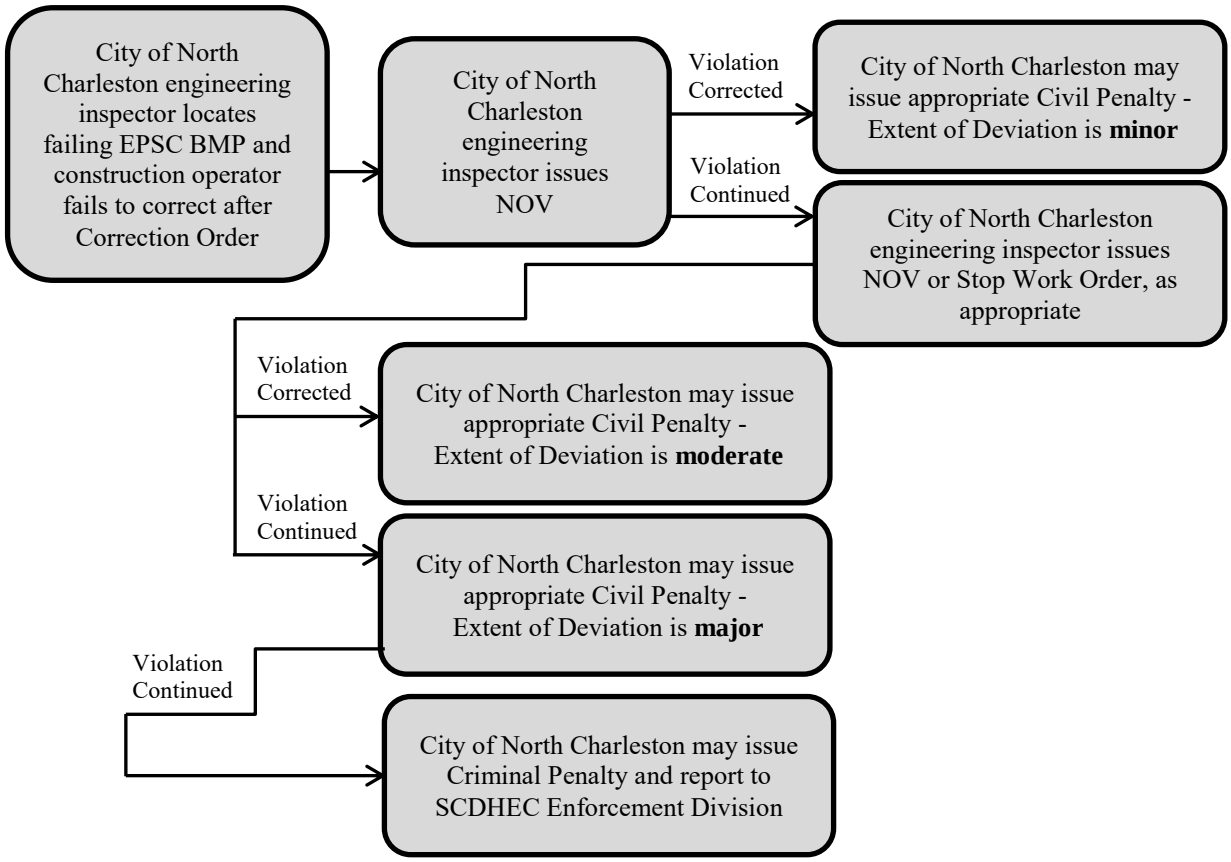
The City of North Charleston may issue a Notice of Violation (NOV) or a Stop Work Order, as appropriate, for all violations involving initiation of construction activity without a site development/land disturbing/grading permit and proper notification. Appropriate Civil or Criminal Penalties may be issued. If non-compliance continues, the City 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).**

The City of North Charleston response:

In cases of minor violations for operation and maintenance of EPSC BMPs, the City of North Charleston engineering inspector may issue a verbal Correction Order, prior to issuing written notifications. The City of North Charleston may issue a Notice of Violation (NOV) if the construction operator fails to correct deficiency after a Correction Order. The City of North Charleston 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 City may report the violation to SCDHEC Enforcement Division.



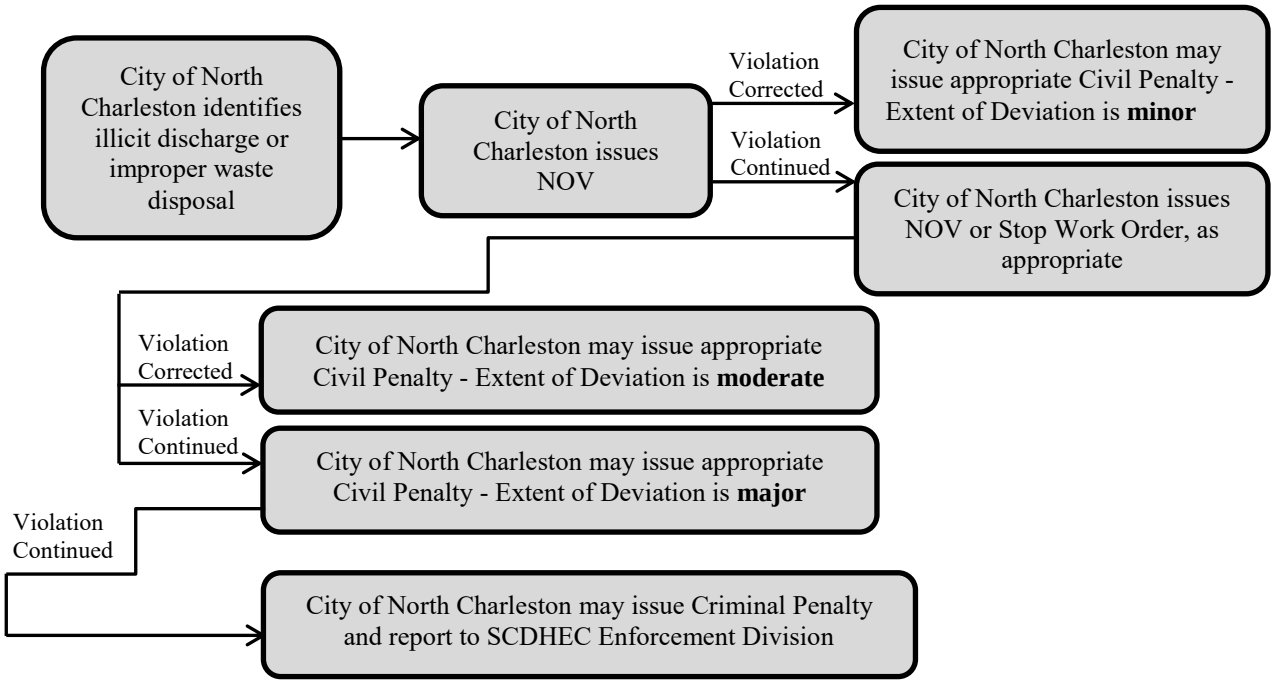
B. Illicit Discharge/ Illicit Connection/ Improper Waste Disposal

The City of North Charleston response:

The City of North Charleston 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, The City of North Charleston will notify the responsible party of the discharge, as soon as practicable, but not later than three (3) days after that determination. The City 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, the City of North Charleston will require responsible parties to submit a plan with a schedule for elimination of the non-stormwater discharge. The City of North Charleston 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.

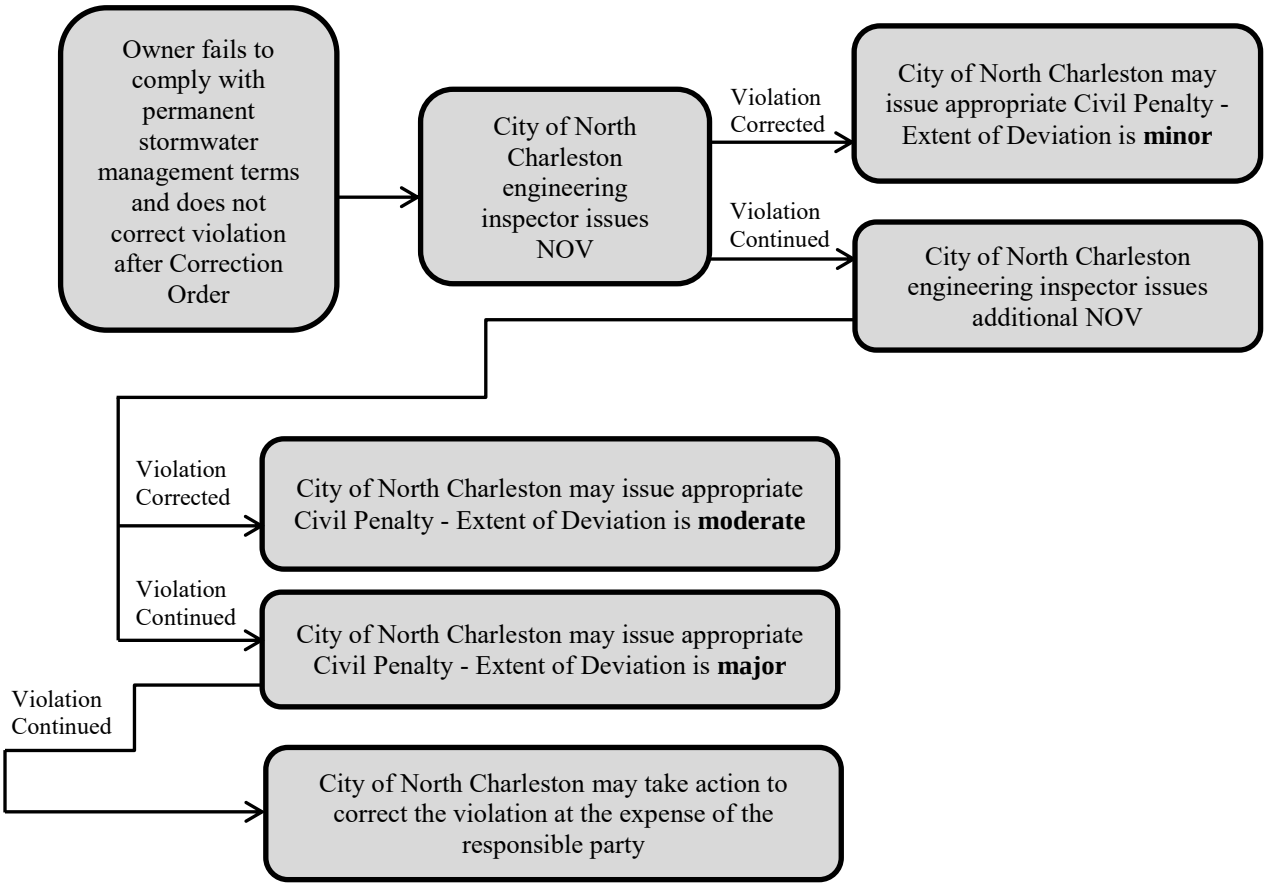
The City of North Charleston may issue a Correction Order, prior to the initial Notice of Violation (NOV). The City of North Charleston will issue an additional NOV or Stop Work Order, as appropriate, after 30 days if the illicit discharge has not been eliminated and no schedule for elimination has been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



C. Failure to Comply with Permanent Stormwater Management Requirements

The City of North Charleston response:

The City of North Charleston may issue a verbal Correction Order, upon initial discovery of a permanent stormwater management violation. The City of North Charleston may issue a Notice of Violation (NOV) if the owner or operator fails to correct deficiency after a Correction Order. The City of North Charleston will conduct follow-up inspections to ensure corrective action is provided. An additional NOV may be issued if corrective action is not provided and an appropriate Civil Penalty may be issued. Continued non-compliance may result in the City taking action to correct the violation at the expense of the responsible party.

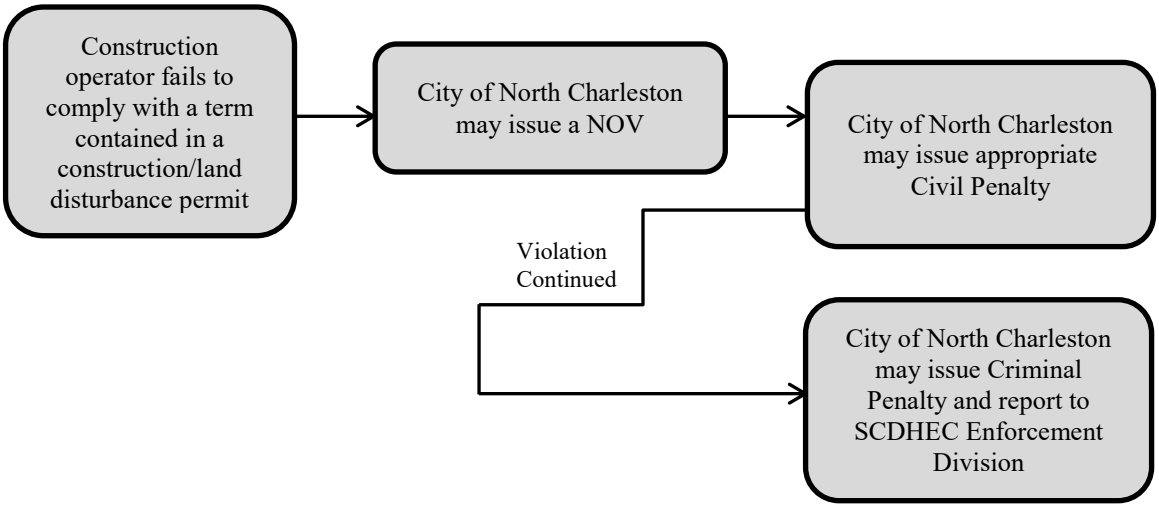


D. Failure to Comply with a Permit

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

The City of North Charleston response:

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

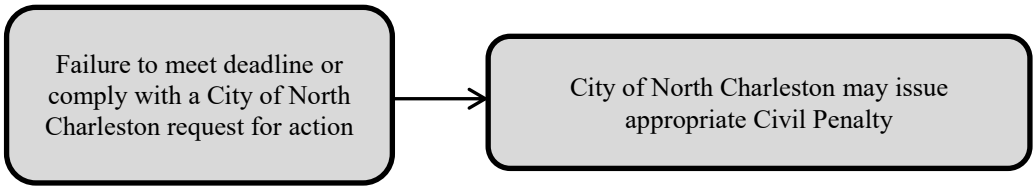


E. Failure to Comply with a City Request

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

The City of North Charleston response:

For instances in which there is a failure to comply with a condition of a City request for action, the City of North Charleston 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 the City of North Charleston:

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, maximum Civil Penalty is to be determined by the City of North Charleston. Suggested Civil Penalties are as follow:

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

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

A total penalty assessment rationale will be developed and outlined in writing for each enforcement action for which a penalty is assessed.

Penalties for long-lasting and/or continuing violations (such as, but not limited to, unauthorized discharges or poor operation and maintenance) and recovery of economic benefit may be assessed per occurrence, per month, or per week.

Appendix G
Carolina Clear Contract and Procedures

City of North Charleston SWMP – MCMs 1 and 2 language provided by Clemson Carolina Clear – June 2014

The **City of North Charleston** 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 Lincolnville
- 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.

Resolution #2018-051

A RESOLUTION

AUTHORIZING THE MAYOR TO EXECUTE A CONTRACT WITH CLEMSON UNIVERSITY FOR THE CITY'S CONTINUED PARTICIPATION IN THE CAROLINA CLEAR PROGRAM

WHEREAS, the City of North Charleston is required by the conditions of its NPDES Phase II Stormwater Permit to provide for Stormwater Education and Awareness and Public Involvement/Participation; and;

WHEREAS, Clemson University has developed the Carolina Clear program to assist communities with satisfying the Storm Water Education and Awareness and Public Involvement/Participation requirements of the EPA/SCDHEC NPDES Phase II Stormwater Program; and;

WHEREAS, the City has participated in the Carolina Clear Program since its inception in 2007 and the current contract is due for renewal; and;

WHEREAS, the Carolina Clear program has been successful in assisting the City with meeting its permit requirements and the City desires to renew the Contract with Clemson University;

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF NORTH CHARLESTON, IN COUNCIL ASSEMBLED, THAT THE MAYOR IS HEREBY AUTHORIZED TO EXECUTE A CONTRACT WITH CLEMSON UNIVERSITY, A COPY OF WHICH IS ATTACHED HERETO AND INCORPORATED BY REFERENCE HEREIN, FOR PARTICIPATION IN THE CAROLINA CLEAR PROGRAM.

THE WITHIN RESOLUTION SHALL BE EFFECTIVE IMMEDIATELY UPON ITS RATIFICATION BY CITY COUNCIL.

Resolved in City Council this 25th day of October, 2018, the 242nd year of Independence of the United States of America.

R. KEITH SUMMEY, MAYOR

APPROVED AS TO FORM:

LEGAL COUNSEL

ATTEST:

ELLEN CLARK, MUNICIPAL CLERK

Contractual Agreement
Between

CLEMSON UNIVERSITY
and
CITY OF NORTH CHARLESTON

PUBLIC awareness and education about natural resources is crucial in the process of protecting and restoring water quality. CLEMSON UNIVERSITY (Clemson) and CITY OF NORTH CHARLESTON will partner to deliver education and involvement programming to general and targeted audiences towards achieving compliance with Phase II Clean Water Act: Stormwater Education and Awareness and Public Involvement/Participation. More specifically, these are referred to as Minimum Control Measures One and Two.

NOW, the parties agree as follows:

1. Clemson will provide public education and outreach to increase awareness and to encourage the public to be involved in stormwater management. 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 will include the furnishing of informational handouts, instructional manuals, promotional materials, webpages and other similar such materials, as deemed appropriate by Clemson University and the participating entity.

2. CITY OF NORTH CHARLESTON will participate in a regional decision-making process to define regional priorities regarding behaviors, pollutants and audiences to be targeted for outreach. CITY OF NORTH CHARLESTON shall provide input as available on audience demographics, behaviors based on staff observations, commercial impacts related to stormwater management that may lead to compliance and enforcement actions, and other input based on stormwater operations.

3. CITY OF NORTH CHARLESTON shall provide information regarding readily available delivery modes for education and involvement programming (e.g., newsletters, community calendars, government access channels, community-mayor meetings, tax or water bills, etc.).

4. Clemson will use a mass media approach, which may include the use of billboard and television public service announcements, radio broadcasts and interviews, newspaper articles, stories and advertisements, and publications to raise awareness of stormwater issues.

5. Each of the public-related activities described below will be part of the base program on an annual basis and will target a specific audience, all subject to modification with the approval of CITY OF NORTH CHARLESTON 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 stormwater education and involvement 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. Update 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 collaboration between the parties.

IMPLEMENT

5.5. Plan, develop, present and be a participant in at least three (3) **community** and **public** programs with emphasis on stormwater education. Provide resources to encourage continued learning and practice adoption.

5.6. Create at least three (3) news articles 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. $4H_2O$ Summer Camp,
v. Engaging teachers in new watershed and stormwater curriculum meeting SC Standards, and
vi. Enviroscape.

5.9. Present at least one (1) program 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 to involve an audience (**general public** or **commercial**) 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) and furthering involvement from citizens in watershed-focused volunteer opportunities (Watershed Stewardship Map) 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 City/County shall provide payment in the amount of **thirty-five thousand dollars ($35,000)**, annually for the base program, for each of the next five years. Fees for additional services will be negotiated based on cost. These costs are based on the 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. CITY OF NORTH CHARLESTON 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 acting within the scope of their employment 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 CITY OF NORTH CHARLESTON, dated January 29, 2007, which are fully incorporated herein by reference.

Dr. George Askew, Vice President

Clemson University PSA

8/23/17

Date

(Mayor, Administrator, Manager)

CITY OF NORTH CHARLESTON

October 25, 2017

Date

JOINT RESOLUTION

ADOPTING A REGIONAL STORMWATER EDUCATION STRATEGY

WHEREAS, population growth, residential and industrial development, and the resulting changes to the landscape have led to stormwater quality and quantity concerns throughout the Ashley and Cooper river watersheds, and

WHEREAS, these impacts cannot be entirely avoided or eliminated but can be minimized, and

WHEREAS, it is currently recognized that control of stormwater quantity and quality is most effectively implemented when people and organizations understand the related causes and consequences of polluted stormwater runoff and flooding, and the actions they can take to control these, and

WHEREAS, the need arises not only from the regulatory requirements of EPA NPDES Phase II Stormwater rules, but also from the recognition that local decision makers, citizens and elected officials will require more than a rudimentary grasp of stormwater pollution and flooding concerns in order to make effective decisions that will have a positive impact on stormwater issues, and

WHEREAS, the development and implementation of effective, outcomes-based stormwater education and outreach programs will meet the related federal stormwater pollution control requirements and those of the communities they serve,

NOW, THEREFORE BE IT RESOLVED that Berkeley, Charleston, and Dorchester Counties, with the municipalities of Charleston, Folly Beach, Hanahan, Isle of Palms, Lincolnville, North Charleston, Sullivan's Island, and Summerville fully support the development and implementation of a regional watershed stormwater education strategy. Efforts will be overseen by the Ashley Cooper Stormwater Education Consortium and their respective municipal and county representatives. This approach seeks to coordinate use of local resources and expertise to achieve economy of scale by jointly addressing common needs of the cities and counties and provide uniformity in educational message to enhance learning.

ADOPTED this 29th day of July, Two Thousand and Eight.

Daniel W. Davis, Chairman
Berkeley County Council

F. Michael Sottile, Mayor
City of Isle of Palms

Timothy E. Scott, Chairman
Charleston County Council

Tyrone E. Aiken, Mayor
Town of Lincolnville

Larry S. Hargett, Chairman
Dorchester County Council

R. Keith Summey, Mayor
City of North Charleston

Joseph P. Riley, Jr., Mayor
City of Charleston

Carl Smith, Mayor
Town of Sullivan's Island

Carl B. Beckmann, Jr., Mayor
City of Folly Beach

Aaron Brown, Mayor Pro-Tem
Town of Summerville

Minnie N. Blackwell, Mayor
City of Hanahan