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## **ANDERSON COUNTY**

# **TMDL MONITORING AND ASSESSMENT PLAN Big Generostee Creek**

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**PREPARED IN ACCORDANCE WITH SCDHEC PERMIT #SCR030000**

# Table of Contents

\*Table of Contents follows section numbers of #SCR030000.

|                       |  |   |
|-----------------------|--|---|
| <b>3.2</b>            | <b>TMDL Monitoring and Assessment</b> .....                    | 1 |
| <b>3.2.1</b>          | <b>Introduction</b> .....                                      | 1 |
| <b>3.2.1.2</b>        | <b>Monitoring Plan Requirements</b> .....                      | 1 |
| <b>3.2.1.2.1.b</b>    | <b>Requirements to Monitor the Pollutants of Concern</b> ..... | 1 |
| <b>3.2.1.2.1.i-ii</b> | <b>Monitoring and Assessment Plan Details</b> .....            | 2 |
| <b>3.2.1.2.1.iii</b>  | <b>Monitoring and Assessment Plan Strategy</b> .....           | 4 |
| <b>3.2.1.2.1.iv-x</b> | .....  | 4 |
| <b>3.2.1.2.1.d</b>    | <b>Reporting</b> .....   | 5 |
| <b>Appendix A:</b>    | <b>Anderson County Monitoring Location(s) Map</b> .....        | 6 |

## List of Tables

|                 |   |   |
|-----------------|---|---|
| <b>Table 1:</b> | <b>Monitoring Plan Details</b> .....                    | 2 |
| <b>Table 2:</b> | <b>3.2.1.2.1.b.i.1-5 Samples and Measurements</b> ..... | 3 |
| <b>Table 3:</b> | <b>3.2.1.2.1.b.iv-x Sampling Details</b> .....          | 4 |

# List of Acronyms and Abbreviations

|        |   |
|--------|---|
| CFU    | Colony Forming Units  |
| MEP    | Maximum Extent Practicable                                    |
| MPN    | Most Probable Number  |
| POC    | Pollutant of Concern  |
| SCDHEC | South Carolina Department of Health and Environmental Control |
| TMDL   | Total Maximum Daily Load                                      |
| WLA    | Wasteload Allocation  |
| WQMS   | Water Quality Monitoring Stations                             |
| WWTP   | Waste Water Treatment Plant                                   |

# ANDERSON COUNTY

## TMDL MONITORING AND ASSESSMENT PLAN

### BIG GENEROSTEE CREEK

The following monitoring and assessment plan was developed to meet the requirements of Section 3 of SCDHEC SMS4 permit number SCR030000.

## 3.2 TMDL Monitoring and Assessment

### 3.2.1 Introduction

A Total Maximum Daily Load (TMDL) has been developed for fecal coliform bacteria in the Big Generostee Creek Watershed, which includes portions of the urbanized area within Anderson County. The TMDL became effective in September 2004 and includes waste load allocations (WLA) for non-point source runoff that thereby includes these urbanized areas. Due to the recent change in preferred indicator bacteria by SCDHEC, from fecal coliform bacteria to *Escherichia coli* (*E. coli*) for fresh water, the proposed pollutant of concern (POC) to be sampled by the County at a representative location is *E. coli*.

#### 3.2.1.2 Monitoring Plan Requirements.

##### 3.2.1.2.1.b Requirements to Monitor the Pollutants of Concern

As stated in Permit Number SCR030000, the following topics will be addressed in Table 1 and Table 2.

- i. Samples and measurements taken for the purpose of the TMDL Monitoring Plan shall:
  - (1) Be representative of the SMS4 discharges,
  - (2) Be reasonably distributed in time, while maintaining representative sampling,
  - (3) Not be terminated for the purpose of preventing the analysis results from a permit or water quality violation,
  - (4) Describe and consider frequency, mass and/or rate of discharge, as appropriate, and,
  - (5) Be expressed in terms of units or measurements consistent with the requirements contained in the WLA.
  
- ii. The information contained in the TMDL Monitoring Plan shall include:
  - (1) Monitoring locations, appropriate for representative data collection,
  - (2) Explanation of why monitoring is being conducted for selected locations,
  - (3) A description of whether the location(s) are representative and contribute to pollutant loads,
  - (4) An indication the seasons during which sampling is intended,
  - (5) The pollutant of concern, or its surrogate(s), as a sampling parameter,
  - (6) Description of the sampling equipment, and,
  - (7) A rationale supporting the proposed monitored location(s) as reflective of water quality concerns to the Maximum Extent Practicable (MEP).

### 3.2.1.2.1.b.i-ii Monitoring and Assessment Plan Details

**Table 1: Monitoring Plan Details**

|  |
|--|
| <p>3.2.1.2.1.b.ii.(1) Monitoring location(s) and details on site selection:</p>  |
| <p>In order to better determine Anderson County’s contribution to the Big Generostee TMDL watershed, a monitoring location on the main stem of Big Generostee Creek was chosen. The location to be sampled is just below the SC 28 bypass creek crossing and adjacent to Animal Shelter Drive (C-9-319A). A map of the selected monitoring location can be found in Appendix A, and more information on the sampling location can be found in the sections below.</p>  |
| <p>3.2.1.2.1.b.ii.(2) Explanation of why monitoring is being conducted for selected locations:</p>   |
| <p>Due to the large size of the Big Generostee Creek TMDL watershed, multiple entities discharge into the watershed and contribute to the TMDL. Data collection will be conducted at the location discussed above; this sampling location will provide a general assessment of bacteria within the County’s urbanized area.</p>  |
| <p>3.2.1.2.1.b.ii.(3) Description of the location(s) and whether they are representative of the MS4 discharge and contribute to pollutant loads:</p>   |
| <p>The selected location provides the most representative data for the urbanized area in the Big Generostee Creek TMDL watershed due to the size of the sub watershed and the amount of urbanized area within the sub watershed. Most of the urbanized areas in the watershed are located in the headwaters of Five Mile Creek, Three Mile Creek, Dye Creek, and Big Generostee Creek, intertwined with portions of the City of Anderson MS4. The sampling location on Big Generostee Creek adjacent to Animal Shelter Drive has a drainage area of approximately 6.5 square miles and is approximately 99.8% urbanized area. The sampled drainage area is 42.9% Anderson County and 57.1% City of Anderson. The selected location represents over 20% of overall area and over 40% of the urbanized area within the Big Generostee watershed.</p> |
| <p>3.2.1.2.1.b.ii.(4) Indication of the seasons during which sampling is intended:</p>   |
| <p>Multiple samples will be collected for each storm event at least once per season. Seasons will be described as:</p> <p style="padding-left: 40px;">Winter: December 1 to February 30</p> <p style="padding-left: 40px;">Spring: March 1 to May 30</p> <p style="padding-left: 40px;">Summer: June 1 to August 30</p> <p style="padding-left: 40px;">Fall: September 1 to November 30</p> <p>Samples taken for each storm event will be reasonably distributed in time, pending appropriate weather conditions, watershed hydrologic response, and sample holding times.</p>   |

|   |
|---|
| 3.2.1.2.1.b.ii.(5) The pollutant of concern, or its surrogate(s), as a sampling parameter:  |
| Due to the recent change in preferred indicator bacteria by SCDHEC, from fecal coliform bacteria to <i>E. coli</i> for fresh water, the proposed pollutant of concern (POC) to be sampled by the County <i>E. coli</i> . The <i>E. coli</i> samples will be collected from Big Generostee Creek just below the SC 28 bypass creek crossing and adjacent to Animal Shelter Drive.  |
| 3.2.1.2.1.b.ii.(6) Description of the sampling equipment:   |
| The County will use sealed, sterile sample bottles provided by a contracted, SCDHEC certified laboratory to collect manual grab samples.  |
| 3.2.1.2.1.b.ii.(7) Rationale supporting the proposed monitored location(s):   |
| Regardless of the location selected for sampling, the contributing watershed will always include sources of bacteria that are unrelated to the MS4 and are not within the authority of the MS4 to control. However, as discussed above in 3.2.1.2.1.b.ii.(3), due to the size of the watershed, the overall landuse makeup, the proposed location will be reflective of the urbanized contributions to the MEP within Anderson County's urbanized area. |

Table 2 discusses how samples and measurements taken for the purpose of the TMDL Monitoring Plan shall meet the five points listed in section 3.2.1.2.1.b.i of the SMS4 permit number SCR030000.

**Table 2. Sampling and Measurements**

|   |
|---|
| 3.2.1.2.1.b.i.1 Be representative of the SMS4 discharges:   |
| The proposed sampling location will provide representative data from the SMS4. The entire Big Generostee Creek TMDL watershed falls within Anderson County and the 99.8% of the sub watershed draining to the sampling location is urbanized area.  |
| 3.2.1.2.1.b.i.2 Be reasonably distributed in time, while maintaining representative sampling:   |
| Multiple samples will be collected during each event, distributed through time, to characterize each sampled event. Samples will be collected, at a minimum, once per season per year. Samples will be collected in various sized storm events so that different flow rates and storm events are characterized, to the MEP. |
| 3.2.1.2.1.b.i.3 Not be terminated for the purpose of preventing the analysis results from a permit or water quality violation:  |
| Anderson County will not terminate sampling for the purpose of preventing the analysis results from a permit or water quality violation.  |
| 3.2.1.2.1.b.i.4 Describe and consider frequency, mass and/or rate of discharge, as appropriate:   |
| Anderson County will record flow depth at the time of sample collection as a surrogate for estimating flow volume between samples.  |
| 3.2.1.2.1.b.i.5 Be expressed in terms of units or measurements consistent with the requirements contained in the WLA:   |
| <i>E. coli</i> sample concentrations will be expressed by the certified laboratory as MPN/100 mL. The County will utilize guidance from SCDHEC to convert the Big Generostee Creek TMDL targeted loads from fecal coliform to <i>E. coli</i> for comparison to the sampled concentrations and approximated loads.           |

### 3.2.1.2.1.b.iii Monitoring and Assessment Plan Strategy

The TMDL monitoring plan for Anderson County is focused on E. coli. Samples and measurements collected will be used to characterize the quality and quantity of the permitted discharges to evaluate the progress toward the WLA and/or WQS attainment. In order to do this, Anderson County will implement the following strategies to the MEP:

- In-stream monitoring
- Outfall monitoring.

The monitoring location(s) discussed above in Table 2 was selected based on the following checked boxes: Monitoring locations must include one/all/a combination of the following

- % MS4 area draining to the WQMS, at least 25%,
- Collection of a representative contributing watershed,
- Inclusion of the entire TMDL watershed within the MS4.

Table 3 discusses how samples and measurements taken for the purpose of the TMDL Monitoring Plan shall meet the requirements of 3.2.1.2.1.b.iv-x of the SMS4 permit number SCR030000.

**Table 3. Sampling Methods**

|   |
|---|
| 3.2.1.2.1.b.vi Method Descriptions:   |
| No field testing is required for this sample. Sample collection and transport procedures are approved under 40 CFR 136.     |
| 3.2.1.2.1.b.vii When no approved analytical method is used:   |
| Not applicable  |
| 3.2.1.2.1.b.viii Sampling minimum:  |
| For each monitoring location, samples of stormwater discharges shall be collected at a minimum of once per season per year. |
| 3.2.1.2.1.b.ix Sample analysis:   |
| Samples collected for laboratory analysis shall be analyzed for E. coli (the POC)   |
| 3.2.1.2.1.b.x Tidal waters:   |
| Not applicable  |

### **3.2.1.2.1.d Reporting**

Anderson County will report on the progress of the characterization of the POC to Big Generostee Creek. Resulting data will be included in every annual report following the commencement of monitoring for TMDL pollutant characterization.

**Appendix A**  
**Anderson County**  
**Big Generostee Creek**  
**Monitoring Site Map**



# Anderson County Big Generostee Sampling

