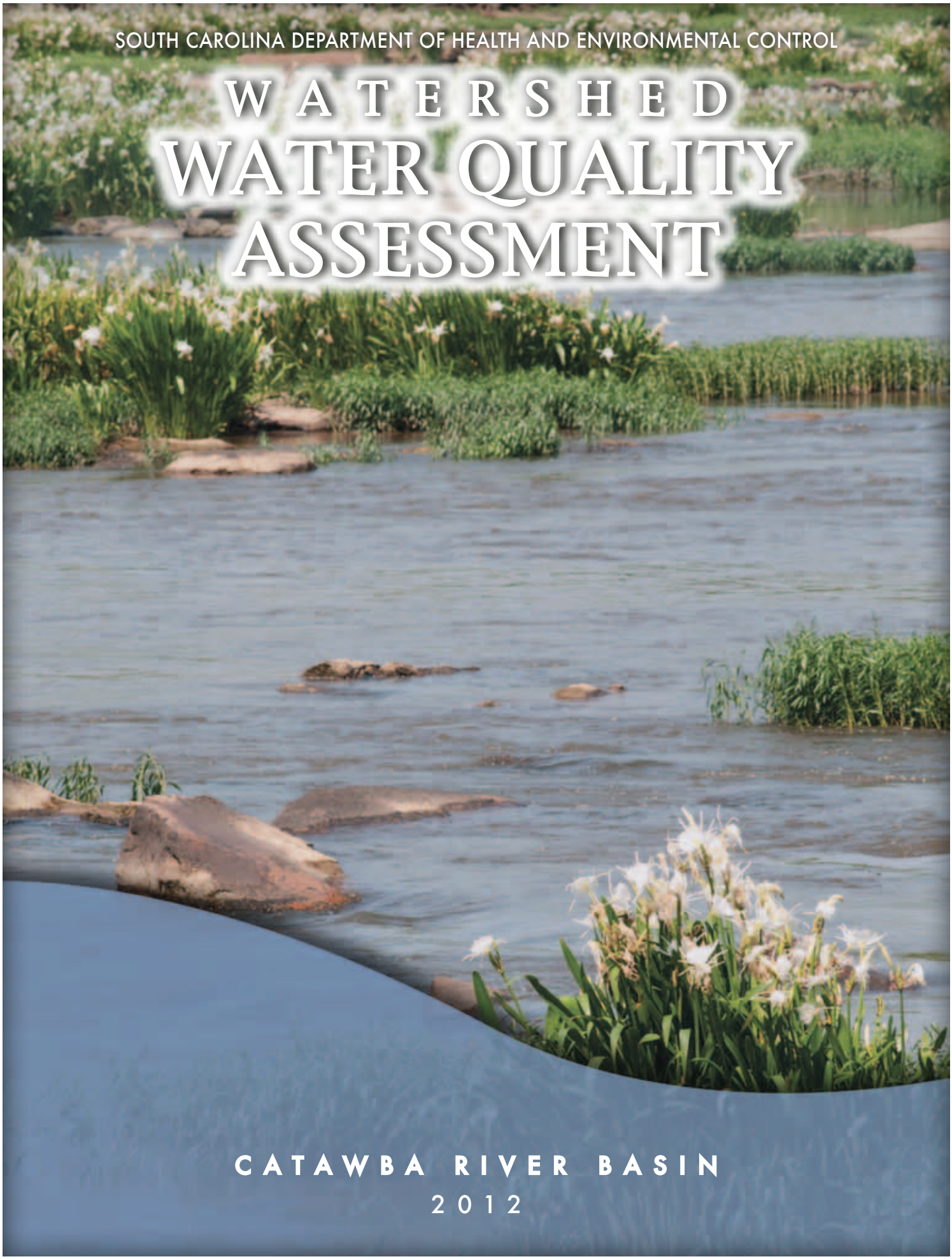
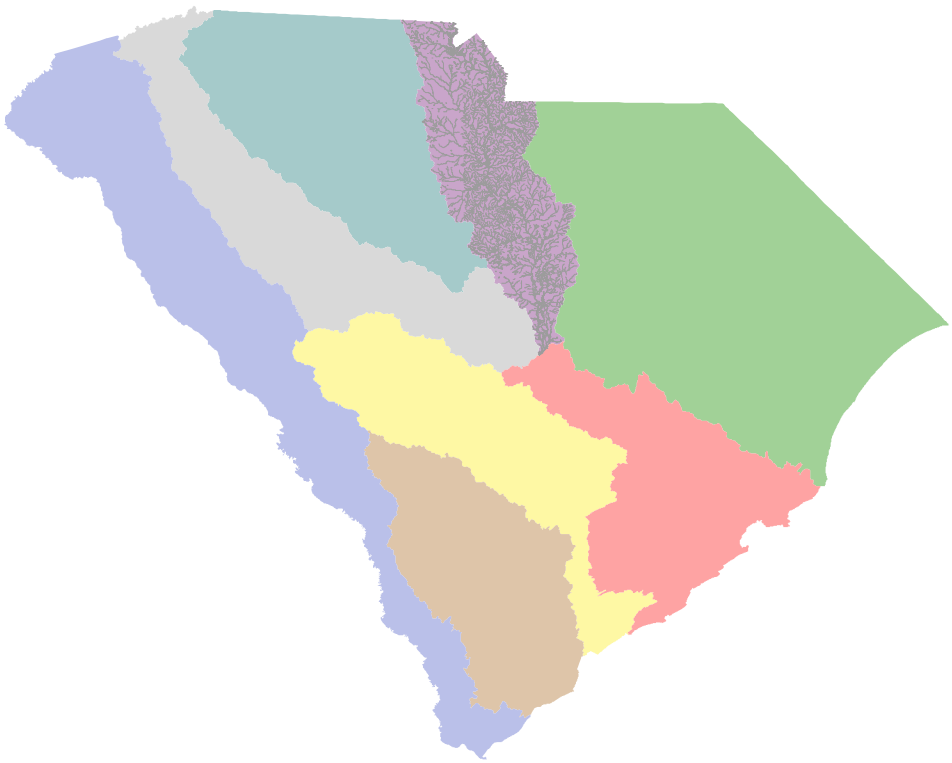

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
WATERSHED
WATER QUALITY
ASSESSMENT
CATAWBA RIVER BASIN
2012

Watershed Water Quality Assessment

Catawba River Basin
2012



South Carolina Department of Health and Environmental Control

Bureau of Water

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PREFACE

In 1993, the South Carolina Department of Health and Environmental Control (SCDHEC) published the first in a series of five watershed management documents. The first in that series, Watershed Water Quality Management Strategy: Savannah-Salkehatchie Basin, communicated SCDHEC's innovative watershed approach, summarizing water programs and water quality in the basins. The approach continues to evolve and improve.

The watershed documents facilitate broader participation in the water quality management process. Through these publications, SCDHEC shares water quality information with internal and external partners, providing a common foundation for water quality improvement efforts at the local watershed or large-scale, often interstate, river basin level.

Water quality data from the Catawba River Basin was collected during 2004 through 2008 and assessed during this fourth, five-year watershed management cycle. This updated atlas provides summary information on a watershed basis, as well as geographical presentations of all permitted watershed activities. Waterbody, monitoring station and facility indices allow the reader to locate information on specific waters and facilities of interest.

A brief summary of the water quality assessments included in the body of this document is provided following the Table of Contents. This summary lists all waters within the Catawba River Basin that fully support recreational and aquatic life uses, followed by those waters not supporting uses. In addition, the summaries list changes in use support status; those that have improved or degraded over the five years since the last assessment was written. More comprehensive information can be found in the individual watershed sections. The information provided is accurate to the best of our knowledge at the time of writing and will be updated in five years.

General information on Catawba River Basin Watershed Protection and Restoration Strategies can be found under that section on page 26, and more detailed information is located within the individual watershed evaluations.

A major change to this newest assessment is the use of the National Watershed Boundary dataset using the 8-, 10-, 12-Digit Hydrologic Unit Codes for South Carolina. This more accurate hydrologic unit code's use changes numerous boundaries in the basin and introduces a new numbering system for the watersheds. For comparison, each watershed evaluation will state the prior hydrologic code.

As SCDHEC continues basinwide and statewide water quality protection and improvement efforts, we are counting on the support and assistance of all stakeholders in the Catawba River Basin to participate in water quality improvements. We look forward to working with you.

If you have questions or comments regarding this document, or if you are seeking further information on the water quality in the Catawba Basin, please contact:

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Table of Contents

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Water Quality Assessment Summary

Catawba River Basin

TERMS USED IN TABLES

AQUATIC LIFE USE SUPPORT (AL) - The degree to which aquatic life is protected is assessed by comparing important water quality characteristics and the concentrations of potentially toxic pollutants with standards. Aquatic life use support is based on the percentage of standards excursions at a sampling site.

For **dissolved oxygen** and **pH**:

If the percentage of standard excursions is 10% or less, then uses are ***fully supported***.

If the percentage of standard excursions is greater than 10% and less than or equal to 25%, then uses are ***partially supported***.

If the percentage of standard excursions is greater than 25%, uses are ***not supported*** (see p.12 for further information).

For **toxins** (heavy metals, priority pollutants, chlorine, ammonia):

If the chronic or acute aquatic life standard for any individual toxicant is not exceeded more than once, uses are ***fully supported***.

If the appropriate acute or chronic aquatic life standard is exceeded more than once (i.e. $\geq$ 2), but is less than or equal to 10% of the samples, uses are ***partially supported***.

If the appropriate acute or chronic aquatic life standard is exceeded more than once (i.e.$\geq$2), and is greater than 10% of the samples, aquatic life uses are ***not supported*** (see p.12 for further information).

For **turbidity** and waters with **numeric total phosphorus, total nitrogen, and chlorophyll-a**:

If the percentage of standard excursions is 25% or less, then uses are ***fully supported***.

If the percentage of standard excursions is greater than 25%, then uses are ***not supported*** (see p.13 for further information).

RECREATIONAL USE SUPPORT (REC) - The degree to which the swimmable goal of the Clean Water Act is attained (recreational use support) is based on the frequency of fecal coliform bacteria excursions, defined as greater than 400/100 ml for all surface water classes.

If 10% or less of the samples are greater than 400/100 ml, then recreational uses are said to be ***fully supported***.

If the percentage of standards excursions is greater than 10% and less than or equal to 25%, then recreational uses are said to be ***partially supported***.

If the percentage of standards excursions is greater than 25%, then recreational uses are said to be ***nonsupported*** (see p.14 for further information).

Excursion - The term excursion is used to describe a measurement that does not comply with the appropriate water quality standard.

Table 1. Fully Supported Sites in the Catawba River Basin 2004-2008

***** = Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation; Trend Data 1994-2008

Watershed	Waterbody Name	Station #	Improving Trends	Other Trends
03050101-15	South Fork Crowders Creek	CW-192 TD		Increasing BOD_5, Total Phosphorus
	Lake Wylie	CW-197	Decreasing Turbidity, Total Phosphorus, Total Nitrogen	
		CW-245		
		CW-198	Decreasing Turbidity, Total Phosphorus, Total Nitrogen	Increasing pH
		CW-201	Decreasing BOD_5, Turbidity, Total Phosphorus, Fecal Coliform	
		RL-06433		
03050103-01	Sugar Creek	CW-013	Decreasing Turbidity, Fecal Coliform	Increasing Total Nitrogen
	Steele Creek	CW-011 TD		Increasing BOD_5; Decreasing Dissolved Oxygen
03050103-02	Sixmile Creek	CW-176 TD	Decreasing Total Phosphorus, Total Nitrogen, Fecal Coliform	Increasing BOD_5; Decreasing Dissolved Oxygen
03050103-03	Bear Creek	CW-151 TD	Decreasing Fecal Coliform	Increasing BOD_5, Total Phosphorus; Decreasing Dissolved Oxygen
03050103-06	Catawba River	CW-014	Decreasing Total Nitrogen	Increasing BOD_5
		CW-041		Increasing BOD_5, Total Nitrogen, Total Suspended Solids, Fecal Coliform Bacteria
		CW-016	Increasing Dissolved Oxygen; Decreasing Total Phosphorus	Increasing BOD_5, Total Nitrogen, pH

Table 1. Fully Supported Sites in the Catawba River Basin 2004-2008

***** = Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation; Trend Data 1994-2008

Watershed	Waterbody Name	Station #	Improving Trends	Other Trends
03050103-06 (continued)	Cedar Creek Reservoir	RL-07003		
03050104-01	Lake Wateree	CW-207	Decreasing Turbidity, Total Phosphorus, Total Nitrogen, Fecal Coliform	Increasing pH
03050104-02	Flat Rock Creek	CW-077		
	Sanders Creek	CW-710		
03050104-03	Big Pine Tree Creek	CW-021		Increasing BOD_5
03050104-04	Kelly Creek	CW-154 TD		Increasing BOD_5
	Colonels Creek	CW-250		Increasing BOD_5, Total Phosphorus; Decreasing pH
		CW-240		Increasing BOD_5; Decreasing Dissolved Oxygen
	Wateree River	CW-206	Increasing Dissolved Oxygen; Decreasing Turbidity, Total Phosphorus, Total Nitrogen, Total Suspended Solids	
		CW-222/ SC-002	Decreasing Total Phosphorus, Total Suspended Solids, Fecal Coliform	Increasing BOD_5, pH

Table 2. Impaired Sites in the Catawba River Basin 2004-2008

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation; Trend Data 1994-2008

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050101-15	Lake Wylie	CW-027	REC	PS	Fecal Coliform	Decreasing BOD_5, Total Phosphorus, Total Nitrogen	Decreasing Dissolved Oxygen
		CW-200	AL	NS	Total phosphorus, Chlorophyll-a		Increasing BOD_5
		CW-230	AL	NS	Copper		Increasing BOD_5, pH
	Crowders Creek	CW-152 TD	REC	NS	Fecal Coliform	Decreasing Total Phosphorus, Total Nitrogen	Increasing BOD_5, Decreasing Dissolved Oxygen
		CW-023 TD	REC	NS	Fecal Coliform	Decreasing Turbidity, Total Phosphorus, Total Nitrogen	Increasing pH
		CW-024 TD	REC	NS	Fecal Coliform		
	Brown Creek	CW-105 TD, TI	REC	NS	Fecal Coliform		Increasing BOD_5
	Beaverdam Creek	RS-06020	AL	PS	Macroinvertebrates		
			REC	NS	Fecal Coliform		
		CW-153 TD, TI	REC	PS	Fecal Coliform		Increasing BOD_5, Turbidity; Decreasing Dissolved Oxygen
	Allison Creek	CW-171 TD, TI	REC	NS	Fecal Coliform		Increasing BOD_5
		CW-249 TD, TI	REC	NS	Fecal Coliform		Increasing BOD_5, Total Phosphorus

Table 2. Impaired Sites in the Catawba River Basin 2004-2008

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation; Trend Data 1994-2008

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050101-15 (continued)	Calabash Branch	CW-134 TD, TI	REC	NS	Fecal Coliform	Decreasing Total Phosphorus, Fecal Coliform	Increasing Turbidity
03050103-01	Sugar Creek	CW-247 TD	REC	NS	Fecal Coliform		Increasing Fecal Coliform
		CW-246*	AL	PS	Macroinvertebrates		
		CW-036	REC	NS	Fecal Coliform	Decreasing total phosphorus	Increasing BOD_5, Total Nitrogen, pH
	McAlpine Creek	CW-226 TD	REC	NS	Fecal Coliform	Decreasing Turbidity, Total Nitrogen, Fecal Coliform	
		CW-064	REC	PS	Fecal Coliform	Decreasing Turbidity, Total Phosphorus, Fecal Coliform	Increasing BOD_5, Total Nitrogen
	Steele Creek	CW-009 TD	REC	NS	Fecal Coliform		Increasing BOD_5, Turbidity, Total Phosphorus; Decreasing pH
		CW-203 TD	REC	NS	Fecal Coliform		
		CW-681*	AL	PS	pH		
03050103-02	Twelvemile Creek	CW-083 TD	REC	NS	Fecal Coliform	Decreasing Fecal Coliform	Increasing BOD_5, Total Phosphorus; Decreasing Dissolved Oxygen
03050103-03	Cane Creek	CW-185 TD for REC	AL	PS	Dissolved Oxygen		Increasing BOD_5, Total Phosphorus; Decreasing Dissolved Oxygen
			REC	PS	Fecal Coliform		
		CW-210*	AL	PS	pH		

Table 2. Impaired Sites in the Catawba River Basin 2004-2008

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation; Trend Data 1994-2008

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050103-03 (continued)	Cane Creek (continued)	CW-017 TD for REC	AL	NS	Dissolved Oxygen, Copper	Decreasing Fecal Coliform	Increasing BOD_5; Decreasing pH
			REC	PS	Fecal Coliform		
	Hannahs Creek	RS-05403 TD for REC	AL	NS	Dissolved Oxygen		
			REC	NS	Fecal Coliform		
	Gills Creek	RS-07043 TD for REC	AL	NS	Dissolved Oxygen		
			REC	NS	Fecal Coliform		
		CW-047 TD	REC	NS	Fecal Coliform		Increasing BOD_5, Total Phosphorus
	Bear Creek	CW-131 TD	REC	NS	Fecal Coliform	Decreasing Fecal Coliform	
	Rum Creek	CW-232	AL	NS	Dissolved Oxygen		
03050103-04	Fishing Creek	CW-029 TD, TI	REC	NS	Fecal Coliform		Increasing BOD_5; Decreasing Dissolved Oxygen
		CW-005 TD for REC, TI	AL	PS	Macroinvertebrates		Increasing Total Nitrogen, pH; Decreasing Dissolved Oxygen
			REC	PS	Fecal Coliform		
		CW-225 TD, TI	REC	NS	Fecal Coliform	Decreasing Fecal Coliform	Increasing BOD_5, pH
		CW-224 TD, TI	REC	PS	Fecal Coliform		Increasing BOD_5
		CW-654*	AL	PS	Macroinvertebrates		

Table 2. Impaired Sites in the Catawba River Basin 2004-2008

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation; Trend Data 1994-2008

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050103-04 (continued)	Fishing Creek (continued)	CW-008 TD, TI	REC	PS	Fecal Coliform	Decreasing Fecal Coliform	Increasing BOD_5, Total Nitrogen
		CW-233 TD, TI	REC	NS	Fecal Coliform		Increasing BOD_5, pH
	Langham Branch	RS-07208 TD for REC	REC	NS	Fecal Coliform		
	Tools Fork	CW-212 TD, for REC, TI	AL	NS	Turbidity		Increasing pH
			REC	NS	Fecal Coliform		
	Wildcat Creek	CW-006 TD, TI	AL	NS	Dissolved Oxygen		Decreasing Dissolved Oxygen; Increasing BOD_5, Total Phosphorus
		CW-096 TD, TI	REC	PS	Fecal Coliform		Decreasing Dissolved Oxygen; Increasing BOD_5, pH
	Taylor Creek	CW-695	AL	PS	Macroinvertebrates		
	Lake Oliphant	CL-021	AL	NS	Total Phosphorus, pH		
	South Fork Fishing Creek	CW-007	AL	PS	Macroinvertebrates		
	Neelys Creek	CW-227 TD, TI	REC	NS	Fecal Coliform		
	Tinkers Creek	CW-234 TD	REC	PS	Fecal Coliform		Increasing Total Phosphorus

Table 2. Impaired Sites in the Catawba River Basin 2004-2008

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation; Trend Data 1994-2008

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050103-05	Grassy Run Branch	CW-088 TD	REC	NS	Fecal Coliform		Increasing BOD_5, Turbidity
	Rocky Creek	CW-002 TD, TI	REC	PS	Fecal Coliform	Decreasing Fecal Coliform	
		CW-236 TD, TI	REC	PS	Fecal Coliform		Increasing BOD_5
	Beaverdam Creek	RS-06171 TD for REC	AL	PS	Macroinvertebrates		
			REC	NS	Fecal Coliform		
	Rocky Creek Arm of Cedar Creek Res.	CW-175 TD, TI (REC)	AL	NS	Total Nitrogen, Total Phosphorus, Dissolved Oxygen	Decreasing Fecal Coliform	Decreasing Dissolved Oxygen; Increasing pH
			REC	PS	Fecal Coliform		
03050103-06	Hidden Creek	CW-221 TD, TI	REC	NS	Fecal Coliform		Increasing BOD_5, Turbidity
	Sixmile Creek	RS-06176	AL	PS	Macroinvertebrates		
	Waxhaw Creek	CW-145 TD for REC	AL	NS	Copper		Increasing BOD_5
			REC	NS	Fecal Coliform		
	Fishing Creek Reservoir	CW-016F	AL	NS	Total Nitrogen, Total Phosphorus	Decreasing Turbidity, Fecal Coliform	Increasing Total Nitrogen
		CW-057	AL	NS	Total Nitrogen, Total Phosphorus, pH	Decreasing Turbidity, Total Phosphorus, Fecal Coliform	Increasing BOD_5, Total Nitrogen, pH

Table 2. Impaired Sites in the Catawba River Basin 2004-2008

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation; Trend Data 1994-2008

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050103-06 (continued)	Great Falls Reservoir	RL-05414	AL	NS	Total Phosphorus		
		RL-08062	AL	NS	Total Nitrogen, Total Phosphorus		
	Cedar Creek Reservoir	Rl-04379	AL	NS	Total Phosphorus		
		RL-06431	AL	NS	Total Phosphorus		
		RL-01007	AL	NS	Total Phosphorus		
		RL-04375	AL	NS	Total Phosphorus		
		RL-05391	AL	NS	Total Phosphorus		
		RL-06443	AL	PS	pH		
		RL-06429	AL	NS	Total Phosphorus		
		CW-174 TD	AL	NS	Total Phosphorus		Decreasing Dissolved Oxygen; Increasing BOD_5
		RL-08046	AL	NS	Total Nitrogen, Total Phosphorus		
		RL-05416	AL	NS	Total Phosphorus		
		CW-033	AL	NS	Total Phosphorus		
	Camp Creek	CW-235 TD	REC	NS	Fecal Coliform		

Table 2. Impaired Sites in the Catawba River Basin 2004-2008

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation; Trend Data 1994-2008

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050104-01	Lake Wateree	CW-231	AL	NS	Total Phosphorus	Decreasing Turbidity, Total Phosphorus, Total Suspended Solids	Increasing BOD_5, Total Nitrogen; Decreasing Dissolved Oxygen
		CW-208	AL	PS	pH	Increasing Dissolved Oxygen; Decreasing Turbidity, Total Phosphorus	Increasing pH
		RL-08035	AL	NS	Total Phosphorus, pH		
		CW-209	AL	PS	pH	Decreasing Turbidity, Total Phosphorus, Total Nitrogen, Total Suspended Solids, Fecal Coliform	Increasing pH
		CL-089	AL	PS	Dissolved Oxygen, pH	Decreasing Total Phosphorus, Total Nitrogen	Increasing BOD_5
	Little Wateree Creek	CW-040	AL	NS	Zinc	Decreasing Turbidity	Increasing Total Phosphorus, pH
	Big Wateree Creek	CW-072 TD, TI (REC)	AL	PS	Dissolved Oxygen	Decreasing Fecal Coliform	Increasing BOD_5; Decreasing pH
			REC	NS	Fecal Coliform		
	Tranham Creek	RS-07059	REC	PS	Fecal Coliform		
03050104-02	Grannies Quarter Creek	CW-237 TD	REC	NS	Fecal Coliform		Increasing BOD_5
	Sawneys Creek Tributary	RS-08073 TD	REC	NS	Fecal Coliform		

Table 2. Impaired Sites in the Catawba River Basin 2004-2008

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation; Trend Data 1994-2008

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050104-02 (continued)	Sawneys Creek	CW-228 TD	REC	NS	Fecal Coliform		Increasing Fecal Coliform
		CW-079 TD	REC	NS	Fecal Coliform		Increasing BOD_5
	Bear Creek	CW-229 TD	REC	NS	Fecal Coliform		Increasing pH
	Twentyfive Mile Creek	CW-080 TD for REC	AL	PS	Macroinvertebrates		Increasing BOD_5; Decreasing Dissolved Oxygen
			REC	PS	Fecal Coliform		
03050104-03	Wateree River	CW-019	AL	PS	Dissolved Oxygen	Decreasing Turbidity, Fecal Coliform	Increasing pH
	Little Pine Tree Creek	CW-223	REC	NS	Fecal Coliform		Increasing BOD_5, Turbidity, Fecal Coliform
	Swift Creek	CW-082	AL	PS	Dissolved Oxygen		Increasing Turbidity
		CW-238	AL	NS	Dissolved Oxygen		Increasing BOD_5, pH
03050104-04	Spears Creek	CW-155 TD	REC	PS	Fecal Coliform		Increasing BOD_5, Fecal Coliform
		CW-166 TD	REC	PS	Fecal Coliform		Increasing BOD_5, Total Phosphorus, Total Nitrogen, pH

Table 3. Changes in Use Support Status

Catawba River Basin Sites that Improved from 2004 to 2008

REC= Recreational; AL=Aquatic Life; FS=Fully Supported Standards; PS=Partially Supported Standards; NS=Nonsupported Standards; TD=TMDL Developed; TI=TMDL Implementation

Watershed	Waterbody Name	Station #	Use	Status		Water Quality Indicator	
				2004	2008	2004	2008
03050101-15	Lake Wylie	CW-197	AL	NS	FS	Copper	
	South Fork Crowders Creek	CW-192	REC	NS	FS	Fecal Coliform	
	Crowders Creek	CW-152	AL	NS	FS	Copper	
		CW-024	AL	PS	FS	Macroinvertebrates	
	Brown Creek	CW-105	AL	NS	FS	Turbidity	
03050103-01	Sugar Creek	CW-247	AL	NS	FS	Cadmium, Copper	
		CW-013	REC	NS	FS	Fecal Coliform	
		CW-036	AL	NS	FS	Copper	
	McAlpine Creek	CW-064	REC	NS	PS	Fecal Coliform	Fecal Coliform
	Steele Creek	CW-011	REC	NS	FS	Fecal Coliform	
03050103-02	Sixmile Creek	CW-176	REC	NS	FS	Fecal Coliform	
	Twelvemile Creek	CW-083	AL	NS	FS	Turbidity, Copper	
03050103-03	Cane Creek	CW-185	AL	NS	PS	Dissolved Oxygen	Dissolved Oxygen
	Bear Creek	CW-151	AL	NS	FS	Dissolved Oxygen	
			REC	PS	FS	Fecal Coliform	
		CW-131	AL	NS	FS	Dissolved Oxygen	
	Rum Creek	CW-232	REC	PS	FS	Fecal Coliform	
03050103-04	Fishing Creek	CW-005	REC	NS	PS	Fecal Coliform	Fecal Coliform
		CW-225	AL	NS	FS	Copper	
		CW-224	REC	NS	PS	Fecal Coliform	Fecal Coliform
	Wildcat Creek	CW-006	REC	NS	PS	Fecal Coliform	Fecal Coliform
		CW-096	AL	NS	FS	Turbidity	
			REC	NS	PS	Fecal Coliform	Fecal Coliform
03050103-05	Grassy Run Branch	CW-088	AL	NS	FS	Dissolved Oxygen	
	Rocky Creek	CW-002	REC	NS	PS	Fecal Coliform	Fecal Coliform

Catawba River Basin Sites that Improved from 2004 to 2008

REC= Recreational; AL=Aquatic Life; FS=Fully Supported Standards; PS=Partially Supported Standards; NS=Nonsupported Standards; TD=TMDL Developed; TI=TMDL Implementation

Watershed	Waterbody Name	Station #	Use	Status		Water Quality Indicator	
				2004	2008	2004	2008
03050103-05 (continued)	Rocky Creek Arm of Cedar Creek Reservoir	CW-175	REC	NS	PS	Fecal Coliform	Fecal Coliform
03050103-06	Catawba River	CW-014	REC	PS	FS	Fecal Coliform	
		CW-041	AL	NS	FS	Copper	
	Cedar Creek Reservoir	CW-174	REC	PS	FS	Fecal Coliform	
03050104-01	Lake Wateree	CW-208	AL	NS	PS	Total Phosphorus, pH, Chlorophyll-a	pH
		CW-207	AL	NS	FS	Total Phosphorus, pH	
		CW-209	AL	NS	PS	Total Phosphorus, pH	pH
	Little Wateree Creek	CW-040	REC	PS	FS	Fecal Coliform	
03050104-02	Grannies Quarter Creek	CW-237	AL	PS	FS	pH	
	Bear Creek	CW-229	AL	PS	FS	Dissolved Oxygen	
03050104-04	Kelly Creek	CW-154	REC	PS	FS	Fecal Coliform	
	Spears Creek	CW-166	REC	NS	PS	Fecal Coliform	Fecal Coliform

Table 4. Changes in Use Support Status

Catawba River Basin Sites that Degraded from 2004 to 2008

REC= Recreational; AL=Aquatic Life; FS=Fully Supported Standards; PS=Partially Supported Standards; NS=Nonsupported Standards; TD=TMDL Developed; TI=TMDL Implementation

Watershed	Waterbody Name	Station #	Use	Status		Water Quality Indicator	
				2004	2008	2004	2008
03050101-15	Lake Wylie	CW-230	AL	FS	NS		Copper
		CW-200	AL	FS	NS		Total Phosphorus, Chlorophyll-a
	Crowders Creek	CW-152	REC	PS	NS	Fecal Coliform	Fecal Coliform
		CW-024	REC	PS	NS	Fecal Coliform	Fecal Coliform
03050103-01	Sugar Creek	CW-247	REC	PS	NS	Fecal Coliform	Fecal Coliform
03050103-02	Twelvemile Creek	CW-083	REC	PS	NS	Fecal Coliform	Fecal Coliform
03050103-04	Fishing Creek	CW-233	REC	PS	NS	Fecal Coliform	Fecal Coliform
	Neelys Creek	CW-227	REC	PS	NS	Fecal Coliform	Fecal Coliform
	Grannies Quarter Creek	CW-237	REC	PS	NS	Fecal Coliform	Fecal Coliform
	Sawneys Creek	CW-079	REC	PS	NS	Fecal Coliform	Fecal Coliform
03050104-03	Little Pine Tree Creek	CW-233	REC	PS	NS	Fecal Coliform	Fecal Coliform
03050104-04	Spears Creek	CW-155	REC	FS	PS		Fecal Coliform

Introduction

The South Carolina Department of Health and Environmental Control (SCDHEC or the Department) initiated its first watershed planning activities as a result of a U.S. Environmental Protection Agency (USEPA) grant in June of 1972. These activities were soon extended by requirements for a Continuing Planning Process under §303(e), "Federal Water Pollution Control Act Amendments of 1972," U.S. Public Law 92-500. In 1975, the SCDHEC published basin-planning reports for the four major basins in South Carolina. A related planning activity resulted from §208 of the Federal Water Pollution Control Act, which required states to prepare planning documents on an areawide basis. The Continuing Planning Process, watershed assessments, and 208 plans are elements of South Carolina's overall water quality management plan. In 1992, SCDHEC's Bureau of Water initiated its Watershed Water Quality Management program to better coordinate river basin planning and water quality management. Watershed-based management allows the Department to address Congressional and Legislative mandates in a coordinated manner and to better utilize current resources. The watershed approach also improves communication between the Department, the regulated community, and the public on existing and future water quality issues.

Purpose of the Watershed Water Quality Assessment

A watershed is a geographic area into which the surrounding waters, sediments, and dissolved materials drain, and whose boundaries extend along surrounding topographic ridges. Watershed-based water quality management recognizes the interdependence of water quality related activities associated with a drainage basin including: monitoring, problem identification and prioritization, water quality modeling, planning, permitting, and other activities. The Bureau of Water's watershed approach integrates these and other activities by watershed, resulting in appropriately focused water quality protection efforts. While an important aspect of the program is water quality problem identification and solution, the emphasis is on problem prevention.

The Department has divided the State into five regions (areas consisting of one or more river basins), along hydrologic lines, which contain approximately the same number of NPDES permitted dischargers. A Watershed Water Quality Assessment (WWQA) will be created for each major river basin within the five regions and will be updated on a five-year rotational basis. This will allow for effective allocation and coordination of water quality activities and efficient use of available resources. The Catawba River Basin is subdivided into 11 watersheds or hydrologic units, and includes the Catawba River Basin originating in North Carolina and the Wateree River Basin. The hydrologic units are based on the National Watershed Boundary dataset using the 8-, 10-, 12-Digit Hydrologic Unit Codes for South Carolina. All water quality related evaluations for the Catawba River Basin are described at the 10-digit watershed level. The stream names used are derived from USGS topographic maps. The National Hydrography Dataset (NHD) served as the basemap for streams and lakes. The dataset was used to calculate stream length estimates, and lake acreages. NHD is the digital database of the USGS 1:24,000 scale hydrography, integrated with reach (stream) related information from the USEPA. Based on the blue line streams of the USGS topographic maps, it is likely that portions of the stream network in terms of perennial, intermittent, and ephemeral streams are not accurately represented.

The watershed-based assessments fulfill a number of USEPA reporting requirements including various activities under §303(d), §305(b), §314, and §319 of the Clean Water Act (CWA). Section 303(d) requires a listing of waters located within a watershed that do not meet applicable water quality standards. Section 305(b) requires that the State biennially submit a report that includes a water quality description and analysis of all navigable waters to estimate environmental impacts. Section 314 requires that the State submit a biennial report that identifies, classifies, describes, and assesses the status and trends in water quality of publicly owned lakes. The watershed plan is also a logical evaluation, prioritization, and implementation tool for nonpoint source (§319) requirements. Nonpoint source best management practices (BMPs) can be selected by identifying water quality impairments and necessary controls, while considering all the activities occurring in the drainage basin.

The assessment also allows for more efficient issuance of National Pollutant Discharge Elimination System (NPDES) and State wastewater discharge permits. Proposed permit issuances within a watershed may be consolidated and presented to the public in groups, rather than one at a time, allowing the Department to realize a resource savings and the public to realize an information advantage.

The Watershed Water Quality Assessment (WWQA) is a geographically based document that describes, at the watershed level, water quality related activities that may potentially have an adverse impact on water quality. The Watershed Implementation Staff investigates the impaired streams mentioned in the WWQA to determine, where possible, the source of the impairment and recommends solutions to correct the problems. As part of this effort, the watershed staff is forging partnerships with various federal and state agencies, local governments, and community groups. In particular, the Department's Watershed Program and the NRCS (Natural Resources Conservation Service) district offices are working together to address some of the nonpoint source (NPS) concerns in the basin. By combining NRCS's local knowledge of land use and the Department's knowledge of water quality, we are able to build upon NRCS's close relationships with landowners and determine where NPS projects are needed. These projects may include educational campaigns or special water quality studies.

Factors Assessed in Watershed Evaluations

Surface Water Quality

SCDHEC's Bureau of Water and Bureau of Environmental Services work to ensure that the water in South Carolina is safe for drinking and recreation, and that it is suitable to support and maintain aquatic flora and fauna. Functions include planning, permitting, compliance assurance, enforcement, and monitoring. This section provides an overview of water quality evaluation and protection activities.

Monitoring

In an effort to evaluate the State's water quality, the Department operates and collects data from a statewide network of ambient monitoring sites. The ambient monitoring network is directed toward determining long-term water quality trends, assessing attainment of water quality standards, identifying locations in need of additional attention, and providing background data for planning and evaluating stream classifications and standards.

Ambient monitoring data are also used in the process of formulating permit limits for wastewater discharges with the goal of maintaining State and Federal water quality standards and criteria in the receiving streams in accordance with the goals of the Clean Water Act. These standards and criteria define the instream chemical concentrations that provide for protection and reproduction of aquatic flora and fauna, help determine support of the classified uses of each waterbody, and serve as instream limits for the regulation of wastewater discharges or other activities. In addition, by comparing the ambient monitoring network data to the State Water Quality Standards, these data are used in the preparation of the biennial §305(b) report to Congress, which provides a general summary of statewide water quality, and the §303(d) list of impaired waters with respect to attainment of classified uses.

There are several major components to SCDHEC's ambient surface water quality monitoring activities, including ongoing fixed-location monitoring, cyclic watershed monitoring, and statewide probability-based monitoring, each designed to provide data for water quality assessment of major water resource types at different spatial and temporal scales. In addition to sites sampled specifically as part of the cyclical watershed activities (W), the ambient surface water quality monitoring program includes several different monitoring station types: Integrator (INT), Special Purpose (SPRP), Summer-Only (SUMM), Random Stream for year ## (RS##), Random Lake for year ## (RL##), Random Tide Creek for year ## (RT##), Random Open Water for year ## (RO##), biological (BIO) stations. Special Study Sites (SSS) are designed to investigate specific activities at a station.

Integrator Sites are fixed-location sites sampled on a monthly basis, year-round, every year, and target the furthest downstream access of each of the 10-digit watershed units in the state, as well as the major waterbodies that occur within these watershed units. Special Purpose Sites are also permanent,

monthly, year-round, fixed-location sites, but represent locations of special interest to the Department that do not meet the location criteria of Integrator Sites.

Summer-Only stations are sampled monthly from May through October, a period critical to aquatic life, and characterized by higher water temperatures and lower flows. There are very few Summer-Only Sites as they are intended to track specific reservoir eutrophication concerns.

Watershed stations are sampled on a monthly basis, year-round, during a basin's target year. Watershed stations are located to provide more complete and representative coverage within the larger drainage basin, and to identify additional monitoring needs. Watershed stations have the same parameter coverage as Integrator Sites. Watershed stations are locations with extensive historic monitoring data (e.g. primary or secondary monitoring sites under the previous design). Changes in water quality can be identified by comparison of the new data to the historic data.

A statewide Probability-Based, or random sampling, component is part of the monitoring design. A probability-based monitoring design is a type of a survey design in which the population of interest is sampled in a fashion that allows statements to be made about the whole population based on a subsample, and produces an estimate of the accuracy of the assessment results. The advantage of the probability-based sampling design is that statistically valid statements about water quality can be made about large areas based on a relatively small subsample. Separate monitoring schemes have been developed for stream, lake/reservoir, and estuarine resources. Each year a new statewide set of probability-based random sites is selected for each waterbody type. Random Sites are sampled on a monthly basis for one year with the same parameter coverage as Integrator Sites. The data from those Random Sites located within this basin are included in this assessment.

Ambient biological trend monitoring is conducted to collect data to indicate general biological conditions of State waters that may be subject to a variety of point and nonpoint source impacts. Ambient biological sampling is also used to establish regional reference or "least impacted" sites from which to make comparisons in future monitoring. Additionally, special macroinvertebrate studies, in which stream specific comparisons among stations located upstream and downstream from a known discharge or nonpoint source area, are used to assess impact.

Qualitative sampling of macroinvertebrate communities is the primary bioassessment technique used in ambient biological trend monitoring. A habitat assessment of general stream habitat availability and a substrate characterization is conducted at each site. Annual ambient biological monitoring is conducted during low flow "worst case" conditions in July - September. Some coastal plain streams that have no flow conditions in the summer months may be sampled in the winter (January-March). This technique may also be used in special studies for the purpose of determining if, and to what extent, a wastewater discharge or nonpoint source runoff is impacting the receiving stream. A minimum of two sample locations, one upstream and one downstream from a discharge or runoff area, is collected. At least one downstream recovery station is also established when appropriate. Sampling methodology follows procedures described in Standard Operating Procedures, Biological Monitoring. Only sites described as 'BIO' will collect information on the macroinvertebrate communities used in the ambient biological trend monitoring.

Many pollutants may be components of point source discharges, but may be discharged in a discontinuous manner, or at such low concentrations that water column sampling for them is impractical. Some pollutants are also common in nonpoint source runoff, reaching waterways only after a heavy rainfall; therefore, in these situations, the best media for the detection of these chemicals are sediment and fish tissue where they may accumulate over time. Their impact may also affect the macroinvertebrate community.

The ambient monitoring program has the capability of sampling a wide range of media and analyzing them for the presence or effects of contaminants. Ambient monitoring data (2004-2008) and trend data (1994- 2008) from 122 stations were reviewed for the Catawba River Basin.

Natural Swimming Areas

Although all waters of the State are protected for swimming, some areas are more popular than others and may require closer monitoring. Currently monitored areas are located and discussed in the appropriate watershed evaluations.

Classified Waters, Standards, and Natural Conditions

The waters of the State have been classified in regulation based on the desired uses of each waterbody. The South Carolina water quality standards are promulgated in S.C. Regulation 61-68, *Water Classifications and Standards*. S.C. Regulation 61-69, *Classified Waters,* is a compilation of many of the waters of the State listed by name, the county(ies) where the waterbody is located, the classification of the waterbody and any designation for that waterbody, and a brief description of the waterbody and any site-specific numeric criteria that apply to the listed waterbody. State standards for various parameters have been established to protect all uses within each classification. The water-use classifications that apply to this basin are as follows.

Class ORW, or "outstanding resource waters", are freshwaters or saltwaters that constitute an outstanding recreational or ecological resource, or those freshwaters suitable as a source for drinking water supply purposes, with treatment levels specified by the Department.

Class FW, or "freshwaters", are freshwaters that are suitable for primary and secondary contact recreation and as a source for drinking water supply, after conventional treatment, in accordance with the requirements of the Department. These waters are suitable for fishing, and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. This class is also suitable for industrial and agricultural uses.

Class GB, or "groundwaters", include all groundwaters of the State, unless classified otherwise, which meet the definition of underground sources of drinking water.

Site specific numeric standards (*) for surface waters may be established by the Department to replace the numeric standards found in Regulation 61-68 or to add new standards not contained in R.61-68. Establishment of

such standards shall be subject to public participation and administrative procedures for adopting regulations. In addition, such site specific numeric standards shall not apply to tributary or downstream waters unless specifically described in the water classification listing in R.61-69.

The standards are used as instream water quality goals to maintain and improve water quality and also serve as the foundation of the Bureau of Water's program. They are used to determine permit limits for treated wastewater dischargers and any other activities that may impact water quality. Using mathematical Wasteload Allocation Models, the impact of a wastewater discharge on a receiving stream is predicted under critical conditions following R.61-68. These predictions are then used to set limits for different pollutants on the National Pollutant Discharge Elimination System (NPDES) permits issued by the Department. The NPDES permit limits are set so that, as long as a permittee (wastewater discharger) meets the established permit limits, the discharge should not cause a standards violation in the receiving stream. All discharges to the waters of the State are required to have an NPDES permit and must abide by those limits, under penalty of law.

Classifications are based on desired uses, not on natural or existing water quality, and are a legal means to obtain the necessary treatment of discharged wastewater to protect designated uses. Actual water quality may not have a bearing on a waterbody's classification. A waterbody may be reclassified if desired or existing public uses justify the reclassification and the water quality necessary to protect these uses is attainable. A classification change is an amendment to a State regulation and requires public participation, SCDHEC Board approval, and General Assembly approval.

Natural conditions may prevent a waterbody from meeting the water quality goals as set forth in the standards. The fact that a waterbody does not meet the specified numeric standards for a particular classification does not mean the waterbody is polluted or of poor quality. Certain types of waterbodies (i.e. swamps, lakes, tidal creeks) may naturally have water quality lower than the numeric standards. A waterbody can have water quality conditions below standards due to natural causes and still meet its use classification. A site specific numeric standard may be established by the Department after being subjected to public participation and administrative procedures for adopting regulations. Site specific numeric standards apply only to the stream segment described in the water classification listing, not to tributaries or downstream unspecified waters.

Water Quality Indicators

Water quality data are used to describe the condition of a waterbody, to help understand why that condition exists, and to provide some clues as to how it may be improved. Water quality indicators include physical, chemical, and biological measurements. The current State of S.C. Monitoring Strategy describes what parameters are sampled, where they are sampled, and how frequently. It is available on our website at www.scdhec.gov/environment/water/docs/strategy.pdf .

MACROINVERTEBRATE COMMUNITY

Macroinvertebrates are aquatic insects and other aquatic invertebrates associated with the substrates of waterbodies (including, but not limited to, streams, rivers, tidal creeks, and estuaries). Macroinvertebrates can be useful indicators of water quality because these communities respond to integrated stresses over time that reflect fluctuating environmental conditions. Community responses to various pollutants (i.e. organic, toxic, and sediment) may be assessed through interpretation of diversity, known organism tolerances, and in some cases, relative abundances and feeding types.

FISH TISSUE

Many pollutants occur in such low concentrations in the water column that they are usually below analytical detection limits. Over time many of these chemicals may accumulate in fish tissue to levels that are easily measured. By analyzing fish tissue it is possible to see what pollutants may be present in waterbodies at very low levels. This information can also be used to determine if consumption of the fish poses any undue human health concerns and to calculate consumption rates that are safe.

DISSOLVED OXYGEN

Oxygen is essential for the survival and propagation of aquatic organisms. If the amount of oxygen dissolved in water falls below the minimum requirements for survival, aquatic organisms or their eggs and larvae may die. A severe example is a fish kill. Dissolved oxygen (DO) varies greatly due to natural phenomena, resulting in daily and seasonal cycles. Different forms of pollution also can cause declines in DO.

Changes in DO levels can result from temperature changes or the activity of plants and other organisms present in a waterbody. The natural diurnal (daily) cycle of DO concentration is well documented. Dissolved oxygen concentrations are generally lowest in the morning, climbing throughout the day due to photosynthesis and peaking near dusk, then steadily declining during the hours of darkness.

There is also a seasonal DO cycle in which concentrations are greater in the colder, winter months and lower in the warmer, summer months. Streamflow (in freshwater) is generally lower during the summer and fall, and greatly affects flushing, reaeration, and the extent of saltwater intrusion, all of which affect dissolved oxygen values.

BIOCHEMICAL OXYGEN DEMAND

Five-day biochemical oxygen demand (BOD_5) is a measure of the amount of dissolved oxygen consumed by the decomposition of carbonaceous and nitrogenous matter in water over a five-day period. The BOD_5 test indicates the amount of biologically oxidizable carbon and nitrogen that is present in wastewater or in natural water. Matter containing carbon or nitrogen uses dissolved oxygen from the water as it decomposes, which can result in a dissolved oxygen decline. The quantity of BOD_5 discharged by point sources is limited through the National Pollutant Discharge Elimination System

(NPDES) permits issued by the Department. The discharge of BOD_5 from a point source is restricted by the permits so as to maintain the applicable dissolved oxygen standard.

pH

pH is a measure of the hydrogen ion concentration of water, and is used to indicate degree of acidity. The pH scale ranges from 0 to 14 standard units (SU). A pH of 7 is considered neutral, with values less than 7 being acidic, and values greater than 7 being basic.

Low pH values are found in natural waters rich in dissolved organic matter, especially in Coastal Plain swamps and black water rivers. The tannic acid released from the decomposition of vegetation causes the tea coloration of the water and low pH. High pH values in lakes during warmer months are associated with high phytoplankton (algae) densities. The relationship between phytoplankton and daily pH cycles is well established. Photosynthesis by phytoplankton consumes carbon dioxide during the day, which results in a rise in pH. In the dark, phytoplankton respiration releases carbon dioxide. In productive lakes, carbon dioxide decreases to very low levels, causing the pH to rise to 9-10 SU.

Fecal Coliform Bacteria

Fecal coliform bacteria are present in the digestive tract and feces of all warm-blooded animals, including humans, poultry, livestock, and wild animal species. Fecal coliform bacteria are themselves generally not harmful, but their presence indicates that surface waters may contain pathogenic microbes. Diseases that can be transmitted to humans through water contaminated by improperly treated human or animal waste are the primary concern. At present, it is difficult to distinguish between waters contaminated by animal waste and those contaminated by human waste.

Public health studies have established correlations between fecal coliform numbers in recreational and drinking waters and the risk of adverse health effects. Based on these relationships, the USEPA and SCDHEC have developed enforceable standards for surface waters to protect against adverse health effects from various recreational or drinking water uses. Proper waste disposal or sewage treatment prior to discharge to surface waters minimizes this type of pollution.

Nutrients

Oxygen demanding materials and plant nutrients are common substances discharged to the environment by man's activities, through wastewater facilities and by agricultural, residential, and stormwater runoff. The most important plant nutrients, in terms of water quality, are phosphorus and nitrogen. In general, increasing nutrient concentrations are undesirable due to the potential for accelerated growth of aquatic plants, including algae.

The forms of nitrogen routinely analyzed at SCDHEC stations are ammonia and ammonium nitrogen (NH_3/NH_4), total Kjeldahl nitrogen (TKN), and nitrite and nitrate nitrogen (NO_2/NO_3). Ammonia and ammonium are readily used by plants. TKN is a measure of organic nitrogen and ammonia in a sample. Nitrate is the product of aerobic transformation of ammonia, and is the most common form

used by aquatic plants. Nitrite is usually not present in significant amounts. Total nitrogen is the sum of TKN and NO_2/NO_3.

Total phosphorus (TP) is commonly measured to determine phosphorus concentrations in surface waters. TP includes all of the various forms of phosphorus (organic, inorganic, dissolved, and particulate) present in a sample.

CHLOROPHYLL *a*

Nuisance plant growth can create imbalances in the aquatic community, as well as aesthetic and access issues. Invasive growth of rooted aquatic vegetation can clog boat motors and create disagreeable conditions for swimming and water skiing. High densities of microscopic algae (phytoplankton) can cause wide fluctuations in pH and dissolved oxygen, and can cause undesirable shifts in the composition of aquatic life, or even fish kills. Chlorophyll *a* is a dominant photosynthetic pigment in plants and is used as an indicator of the density of phytoplankton in the water column. The process of cultural eutrophication, from increased plant nutrients, is particularly noticeable in lakes. Continuous flushing in streams prevents the development of significant phytoplankton populations and the resultant chemical changes in water quality.

TURBIDITY

Turbidity is an expression of the scattering and absorption of light through water. The presence of clay, silt, fine organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms increases turbidity. Increasing turbidity can be an indication of increased runoff from land. It is an important consideration for drinking water as finished water has turbidity limits.

TOTAL SUSPENDED SOLIDS

Total Suspended Solids (TSS) are the suspended organic and inorganic particulate matter in water. Although increasing TSS can also be an indication of increased runoff from land, TSS differs from turbidity in that it is a measure of the mass of material in, rather than light transmittance through, a water sample. High TSS can adversely impact fish and fish food populations and damage invertebrate populations. There are no explicit State standards for TSS.

HEAVY METALS

Concentrations of cadmium, chromium, copper, lead, mercury, and nickel in water are routinely measured by the Department to compare to State standards intended to protect aquatic life and human health. These metals occur naturally in the environment, and many are essential trace elements for plants and animals. Human activities, such as land use changes and industrial and agricultural processes have resulted in an increased flux of metals from land to water. Atmospheric inputs are also recognized as important sources of metals to aquatic systems. Metals are released to the atmosphere from the burning of fossil fuels (coal, oil, gasoline), wastes (medical, industrial, municipal), and organic materials. The

metals are then deposited on land and in waterways from the atmosphere via rainfall and attached to particulates (dry deposition).

Assessment Methodology

The Watershed Water Quality Assessment is a geographically-based document that describes, at the watershed level, water quality as well as conditions and activities related to water quality. This section provides an explanation of the information assessment methodology used to generate the watershed-level summaries. Water quality data summaries used in this assessment are presented in Appendices A and B.

USE SUPPORT DETERMINATION

Physical, chemical and biological data were evaluated, as described below, to determine if water quality met the water quality criteria established to protect the State classified uses defined in S.C. Regulation 61-68, *Water Classifications and Standards*. Some waters may exhibit characteristics outside the appropriate criteria due to natural conditions. Such natural conditions do not constitute a violation of the water quality criteria. To determine the appropriate classified uses and water quality criteria for specific waterbodies and locations, refer to S.C. Regulation 61-69, *Classified Waters*, in conjunction with S.C. Regulation 61-68.

At the majority of SCDHEC's surface water monitoring stations, samples for analysis are collected as surface grabs once per month, quarter, or year, depending on the parameter. Grab samples collected at a depth of 0.3 meters are considered to be a surface measurement. For the purpose of assessment, only surface samples are used in standards comparisons and trend assessments. Because of the inability to target individual high or low flow events on a statewide basis these data are considered to represent typical physical conditions and chemical concentrations in the waterbodies sampled. All water and sediment samples are collected and analyzed according to standard procedures (SCDHEC 1997, 2001).

Results from water quality samples can be compared to State and USEPA criteria, with some restrictions due to time of collection and sampling frequency. For certain parameters, the monthly sampling frequency employed in the ambient monitoring network is insufficient for strict interpretation of the standards. The USEPA does not define the sampling method or frequency other than indicating that it should be "representative." The grab sample method is considered to be representative for the purpose of indicating excursions relative to criteria, within certain considerations. A single grab sample is more representative of a one-hour average than a four-day average, more representative of a one-day average than a one-month average, and so on; thus, when inferences are drawn from grab samples relative to criteria, sampling frequency and the intent of the criteria must be weighed. When the sampling method or frequency does not agree with the intent of the particular criterion, any conclusion about water quality should be considered as only an indication of conditions, not as a proven circumstance.

Macroinvertebrate community structure is analyzed routinely, at selected stations, as a means of detecting adverse biological impacts on the aquatic fauna of the state's waters due to water quality conditions that may not be readily detectable in the water column chemistry.

This water quality assessment is based on the last complete five years of available quality assured physical, chemical, and biological data ***(2004 - 2008).***

AQUATIC LIFE USE SUPPORT

One important goal of the Clean Water Act, the South Carolina Pollution Control Act, and the State Water Quality Classifications and Standards is to maintain the quality of surface waters to provide for the survival and propagation of a balanced indigenous aquatic community of fauna and flora. The degree to which aquatic life is protected (Aquatic Life Use Support) is assessed by comparing important water quality characteristics and the concentrations of potentially toxic pollutants with numeric criteria.

Support of aquatic life uses is determined based on the percentage of numeric criteria excursions and, where data are available, the composition and functional integrity of the biological community. The term excursion is used to describe a measured pollutant concentration that is outside of the acceptable range as defined by the appropriate criterion. Some waters may exhibit characteristics outside the appropriate criteria due to natural conditions. Such natural conditions do not constitute a violation of the water quality criteria. A number of waterbodies have been given waterbody-specific criteria for pH and dissolved oxygen, which reflect natural conditions. To determine the appropriate numeric criteria and classified uses for specific waterbodies and locations, please refer to S.C. Regulation 61-68, *Water Classifications and Standards* and S.C. Regulation 61-69, *Classified Waters*.

If the appropriate criterion for **dissolved oxygen and pH** are contravened in 10 percent or less of the samples, the criterion is said to be fully supported. If the percentage of criterion excursions is greater than 10 percent, but less than or equal to 25 percent, the criterion is partially supported, unless excursions are due to natural conditions. If there are more than 25 percent excursions, the criterion is not supported, unless excursions are due to natural conditions. The decision that criteria excursions are due to natural conditions is determined by consensus and/or the professional judgment of SCDHEC staff with specific local knowledge.

If the appropriate acute or chronic aquatic life criterion for any individual **toxicant** (**heavy metals, priority pollutants, ammonia**) is exceeded more than once, representing more than 10 percent of the samples collected, the criterion is not supported. If the acute or chronic aquatic life criterion is exceeded more than once, but in less than or equal to 10 percent of the samples, the criterion is partially supported.

The total recoverable metals criteria for **heavy metals** are adjusted to account for solids partitioning following the approach set forth in the Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria, October 1, 1993, by Martha G. Prothro, Acting Assistant Administrator for Water, available from the Water Resource center, USEPA, 401 M St., SW, mail code RC4100, Washington, DC 20460; and 40CFR131.36(b)(1). Under this

approach, a default TSS value of 1 mg/L is used. Where the metals criteria are hardness based, a default value of 25 mg/L is used for waters where hardness is 25 mg/l or less.

The calculation of the appropriate criterion value for **ammonia** requires the values of several associated field parameters measured concurrent with the ammonia sample collection. Where direct measurements of any of the parameters are lacking the ammonia value will not be used to determine compliance with the standards.

If the appropriate criterion for **turbidity** in all waters, and for waters with **numeric total phosphorus, total nitrogen, and chlorophyll-a** criteria is exceeded in more than 25 percent of the samples, the criterion is not supported. If the criterion is exceeded in more than 10 but less than 25 percent, sites are evaluated on a case-by-case basis to determine if local conditions indicate that classified uses are impaired. Among the characteristics considered are: hydrology and morphometry of the waterbody, existing and projected trophic state, characteristics of pollutant loadings and ongoing pollutant control mechanisms. If the criterion is exceeded in less than 10 percent of the samples, then the criterion is fully supported.

If the conclusion for any single parameter is that the criterion is "not supported", then it is concluded that aquatic life uses are not supported for that waterbody, at that monitoring location. If there are no criteria that are "not supported", but the conclusion for at least one parameter criterion is "partially supported", then the conclusion is aquatic life uses are partially supported. Regardless of the number of samples, no monitoring site will be listed as partially or not supporting for any pollutant based a single sample result because of the possibility of an anomalous event.

The goal of the standards for aquatic life uses is the protection of a balanced indigenous aquatic community; therefore, biological data is the ultimate deciding factor, regardless of chemical conditions. If biological data shows a healthy, balanced community, the use is considered supported even if chemical parameters do not meet the applicable criteria.

MACROINVERTEBRATE DATA INTERPRETATION

Macroinvertebrate community assessment data are used to directly determine Aquatic Life Use Support and to support determinations based on water chemistry data. Macroinvertebrate community data may also be used to evaluate potential impacts from the presence of sediment contaminants. Aquatic and semi-aquatic macroinvertebrates are identified to the lowest practical taxonomic level depending on the condition and maturity of specimens collected. The EPT Index and the North Carolina Biotic Index are the main indices used in analyzing macroinvertebrate data. To a lesser extent, taxa richness and total abundance may be used to help interpret data.

The EPT Index or the Ephemeroptera (mayflies) - Plecoptera (stoneflies) - Trichoptera (caddisflies) Index is the total taxa richness of these three generally pollution-sensitive orders. EPT values are compared with least impacted regional sites. The Biotic Index for a sample is the average pollution tolerance of all organisms collected, based on assigned taxonomic tolerance values. A database is currently being developed to establish significant EPT index levels to be used in conjunction with the Biotic Index to address aquatic life use support.

Taxa richness is the number of distinct taxa collected and is the simplest measure of diversity. High taxa richness is generally associated with high water quality. Increasing levels of pollution progressively eliminate the more sensitive taxa, resulting in lower taxa richness. Total abundance is the enumeration of all macroinvertebrates collected at a sampling location. When gross differences in abundance occur between stations, this metric may be considered as a potential indicator.

RECREATIONAL USE SUPPORT

Recreational use support is defined as the degree to which the swimmable goal of the Clean Water Act is attained and is based on the frequency of fecal coliform bacteria excursions. A fecal coliform excursion is defined as an occurrence of a bacteria concentration greater than 400/100 ml for all surface water classes. Comparisons to the bacteria geometric mean standard are not considered appropriate based on sampling frequency and the intent of the standard. If 10 percent or less of the samples are greater than 400/100 ml, then recreational uses are said to be fully supported. If the percentage of standards excursions is greater than 10 percent, but less than or equal to 25 percent, then recreational uses are said to be partially supported. If the percentage of excursions is greater than 25 percent, then it is considered to represent nonsupport of recreational uses.

FISH CONSUMPTION USE SUPPORT

The Department uses a risk-based approach to evaluate fish tissue data and to issue consumption advisories in affected waterbodies. This approach contrasts the average daily exposure dose to the reference dose (RfD). Using these relationships, fish tissue data are interpreted by determining the consumption rates that would not be likely to pose a health threat to adult males and nonpregnant adult females. Because an acceptable RfD for developmental neurotoxicity has not been developed, pregnant women, infants, and children are advised to avoid consumption of fish from any waterbody where a mercury advisory was issued.

Fish consumption use support is determined by the occurrence of advisories or bans on consumption for a waterbody. For the support of fish consumption uses, a fish consumption advisory indicates partial use support, a consumption ban indicates nonsupport of uses. Fish consumption advisories are updated annually in the spring. For background information and the most current advisories please visit the Bureau of Water homepage at http://www.scdhec.gov/water and click on “Advisories.” For more information or a hard copy of the advisories, call SCDHEC’s Fish Consumption Advisory toll-free hotline at (888) 849-7241.

DRINKING WATER USE SUPPORT

Nonattainment of drinking water use is indicated if the median concentration of the ambient surface water data for any pollutant exceeds the appropriate drinking water Maximum Contaminant Level (MCL), based on a minimum of three samples. Where MCLs do not exist, SCDHEC may use or develop other criteria such that pollutant concentrations or amounts do not interfere with drinking water use, actual or intended, as determined by SCDHEC.

Additional Screening and Prioritization Tools

Evaluation of water quality data and other supplemental information facilitates watershed planning. Information from the following is used to develop watershed-based protection and prevention strategies.

LONG-TERM TREND ASSESSMENT

As part of the watershed water quality assessments, surface data from each station are analyzed for statistically significant long-term trends using the Seasonal Kendall Test Without Correction (SKWOC) for significant serial correlation, using a program written in-house using SAS. Flows are not available for most stations, and the parametric concentrations are not flow-corrected. Seasonal Kendall's Tau Analysis is used to test for the presence of a statistically significant trend of a parameter, either increasing or decreasing, over a fifteen-year period. It indicates whether the concentration of a given parameter is exhibiting consistent change in one direction over the specified time period. A two sided test at $p=0.1$ is used to determine statistically significant trends, and the direction of trend. An estimate of the magnitude of any statistically significant trend is calculated.

A rigorous evaluation for trends in time-series data usually includes a test for autocorrelation. The data are not tested for autocorrelation prior to the trend analysis. It is felt that autocorrelation would not seriously compromise a general characterization of water quality trends based on such a long series of deseasonalized monthly samples.

One of the advantages of the seasonal Kendall test is that values reported as being below detection limits (DL) are valid data points in this nonparametric procedure, since they are all considered to be tied at the DL value. When the DL changed during the period of interest, all values are considered to be tied at the highest DL occurring during that period. Since it is possible to measure concentrations equal to the value of the DL, values less than DL are reduced by subtraction of a constant so that they remain tied with each other, but are less than the values equal to the DL. Since fecal coliform bacteria detection limits vary with sample dilution, there is no set DL; therefore, for values reported as less than some number, the value of the number is used.

For the purposes of this assessment, long-term trends in selected parameters were examined using data collected from **1994** through **2008**.

Groundwater Quality

The state of South Carolina depends upon its groundwater resources to supply an estimated 40 percent of its residents. To monitor the ambient quality of this valuable resource, a network of existing public and private water supply wells has been established that provides groundwater quality data representing all of the State's major aquifers (see SCDHEC's Ambient Groundwater Quality Monitoring Network Report for listing of groundwater quality data). A great deal of monitoring is also being carried out at regulated sites with known or potential groundwater contamination (see SCDHEC's South Carolina Groundwater Contamination Inventory).

The ambient monitoring network has been designed to avoid wells in areas of known or potential contamination in order to analyze natural aquifer conditions. Information collected can then be used to identify variations in water chemistry among the major aquifers of South Carolina and give a general understanding of the groundwater conditions throughout the state at varying depths.

Wells sampled in the Catawba River Basin were drilled into one of three aquifers. All the wells above the fall line are completed in the Piedmont Bedrock Aquifer, while wells below the fall line are completed in the Middendorf Aquifer and Black Creek Aquifer. All well samples met state standards for Class GB groundwater (see section on Classified Waters, Standards, and Natural Conditions). The ambient monitoring well sites are indicated in the appropriate watershed evaluations and depicted on the watershed maps.

Piedmont Bedrock Aquifer

The Piedmont Bedrock Aquifer extends from the Fall Line to the Blue Ridge Mountains. The Piedmont bedrock consists of fractured crystalline rock overlain by a saprolitic regolith, and limited alluvial valley fill deposits. Most public and private wells are completed in the fractured crystalline bedrock. Yields from crystalline bedrock vary greatly among wells, depending primarily upon the existence of joints and fractures within the rock. The overlying saprolite is hydraulically connected with the underlying bedrock and provides the primary source of recharge water to the bedrock aquifer. Yields of 4 to 170 gallons per minute (gpm) from the 30 network wells in the Piedmont bedrock have been recorded. This broad range in yield is an indicator of the great variability in the occurrence, size and interconnection of joints and other fractures that exist in this aquifer.

Analysis of three samples obtained from wells completed in the Piedmont Bedrock Aquifer in the Catawba basin show close agreement in geochemical composition. All samples display a neutral pH tendency (7.0-7.7), and low total dissolved solids (TDS). Calcium was the dominant cation while bicarbonate was the most abundant anion. All samples displayed a tendency towards a moderately hard state. As in other samples from the crystalline bedrock, concentrations of silica were high when compared to samples from other aquifers in the Catawba basin.

Middendorf Aquifer

The Middendorf Aquifer overlies the crystalline bedrock and associated saprolite and stretches from the upper coastal plain beyond the Atlantic coastline where it is buried by younger Coastal Plain sediments at maximum depths of over 3000 feet. The Middendorf Aquifer is tapped by only a few wells in the middle and lower coastal plain regions. The lower usage toward the coast is primarily a result of the presence of shallower, more economically developed aquifers such as the Black Creek and Tertiary Limestone (Floridan) Aquifers. Middendorf sediments are comprised of fine to coarse quartzitic and arkosic sands, with discontinuous interbeds of sandy clays, kaolins, and gravel. Lower coastal plain water from the Middendorf Aquifer is often highly mineralized. The downdip increase in ion concentration is thought to be largely a function of the residence time of the water in the aquifer (flow is from the updip recharge area in the upper coastal plain toward downdip, coastal area), as well as from the possible mixing of more mineralized water from adjacent aquifers.

There is a downdip increase in pH from the upper coastal plain (Elgin, AMB-120) to wells in the lower Santee basin [e.g. Summerville (AMB-022), and Mt. Pleasant (AMB-119)]. This is in contrast to the much lower, acidic pH values found in the recharge area where buffering effects are not significant. Other changes in groundwater chemistry from the Middendorf's shallow recharge area to deeper portions of the aquifer include a less distinct downdip increase in fluoride concentrations.

Ambient groundwater samples from wells open to the Middendorf Formation in the Catawba basin are predominantly soft sodium bicarbonate waters with total dissolved solids (TDS) and specific conductivity from the sodium and potassium content with the exception of AMB-120 from Elgin. Analysis of this sample returned results similar to rainwater or with a pH of 5.2 and low TDS, which is consistent with other samples from the Middendorf aquifer near the recharge area.

Black Creek Aquifer

The Black Creek Aquifer is an important source of groundwater in the central coastal plain portion of the Catawba River Basin, namely Sumter County. This aquifer consists of medium to coarse-grained glauconitic and phosphatic quartz sands interbedded with lenses of lignitic and micaceous clays. In some areas, the Black Creek Aquifer is hydraulically similar to, and screened in the same well with, the underlying Middendorf Aquifer. Yields of over 1000 gallons per minute (gpm) from the Black Creek are quite common when wells are screened in both aquifers. Yields that were recorded for Black Creek wells in the monitoring network ranged from 50 to 1500 gpm.

Similar to the Middendorf Aquifer, Black Creek Aquifer water chemistry also indicates a relationship between distance from recharge area and certain chemical concentrations. The high fluoride values in the Black Creek may be attributable to the presence of fluorapatite from the abundant fossilized shark teeth in the formation. Values of pH in the Black Creek Aquifer are generally alkaline, with a much less distinct trend toward higher downdip values than those observed in the Middendorf Aquifer. Samples obtained from the Black Creek aquifer display high variability in their composition, and samples from the recharge areas through the middle coastal plain often show no dominant ionic affinity. With increased

distance from the recharge area, Black Creek waters become more buffered and are typically a sodium bicarbonate type.

NPDES Program

The Water Facilities Permitting Division is responsible for drafting and issuing National Pollutant Discharge Elimination System (NPDES) permits. Facilities are defined as either "major" or "minor." For municipal permits, a facility is considered a "major" if it has a permitted flow of 1 MGD (million gallons per day) or more and is not a private facility. The determination for industrial facilities is based on facility and stream characteristics, including toxicity, amount of flow, BOD (biochemical oxygen demand) loading, proximity of drinking water source, potential to exceed stream standards, and potential effect on coastal waters.

Permitting Process

A completed draft permit is sent to the permittee, the SCDHEC District office, and if it is a major permit, to the USEPA for review. A public notice is issued when the permit draft is finalized. Comments from the public are considered and, if justified, a public hearing is arranged. Both oral and written comments are collected at the hearing, and after considering all information, the Department staff makes the decision whether to issue the permit as drafted, issue a modified permit, or to deny the permit. Everyone who participated in the process receives a notice of the final decision. A copy of the final permit will be sent to anyone who requests it. Staff decisions may be appealed according to the procedures in R.61-72 and the rule of the Administrative Law Court of South Carolina.

The permitting Divisions use general permits with statewide coverage for certain categories of discharges. Discharges covered under general permits include utility water, potable surface water treatment plants, potable groundwater treatment plants with iron removal, petroleum contaminated groundwater, mine dewatering activities, aquaculture facilities, bulk oil and gas terminals, hydrostatic test waters (oil & gas lines), and vehicle wash waters. State land application systems for land disposal and lagoons are also permitted.

Wasteload Allocation

A wasteload allocation (WLA) is the portion of a stream's assimilative capacity for a particular pollutant that is allocated to an existing or proposed point source discharge. Existing WLAs are updated during the basin review process and included in permits during the normal permit expiration and reissuance process. New WLAs are developed for proposed projects seeking a discharge permit or for existing discharges proposing to increase their effluent loading at the time of application. Wasteload allocations for oxygen demanding parameters and nutrients are developed by the Department's modeling staff, and WLAs for toxic pollutants and metals are developed by the appropriate permitting division.

The ability of a stream to assimilate a particular pollutant is directly related to its physical and chemical characteristics. Various techniques are used to estimate this capacity. Simple mass balance/dilution calculations may be used for a particular conservative (nondecaying) pollutant while complex models may be used to determine the fate of nonconservative pollutants that degrade in the environment. Waste characteristics, available dilution, and the number of discharges in an area may, along with existing water quality, dictate the use of a simple or complex method of analysis. Projects that generally do not require complex modeling include: groundwater remediation, noncontact cooling water, mine dewatering, air washers, and filter backwash. Streams that have been modeled are indicated on the watershed maps.

Streams are considered either effluent limited or water quality limited based on the level of treatment required of the dischargers to that particular portion of the stream. In cases where the USEPA published effluent guidelines and the minimum treatment levels required by law are sufficient to maintain instream water quality standards, the stream is said to be effluent limited. Streams lacking the assimilative capacity for a discharge at minimum treatment levels are said to be water quality limited. In cases where better than technology limits are required, water quality, not minimum treatment requirements, controls the permit limits. The Department's modeling staff develops limits for numerous parameters including ammonia nitrogen (NH3-N), dissolved oxygen (DO), and five-day biochemical oxygen demand (BOD_5). Limits for other parameters, including metals, toxics (including total residual chlorine), and nutrients are developed by the Water Facilities Permitting Division in conjunction with support groups within the Department.

Nonpoint Source Management Program

Nonpoint source (NPS) water pollution, sometimes called "runoff pollution" or "polluted runoff" does not result from a discharge at a specific, single location (or point), but generally comes from diffuse, numerous sources. Runoff occurring after a rain event may transport sediment from plowed fields, construction sites, or logging operations, pesticides and fertilizers from farms and lawns, motor oil and grease deposited on roads and parking lots, or bacteria containing waste from agricultural animal facilities or malfunctioning septic systems. The rain moves the pollutants across the land to the nearest waterbody or storm drain where they may impact the water quality in creeks, rivers, lakes, estuaries, and wetlands. NPS pollution may also impact groundwater when it is allowed to seep or percolate into aquifers. Adverse effects of NPS pollution include physical destruction of aquatic habitat, fish kills, interference with or elimination of recreational uses of a waterbody (particularly lakes), closure of shellfish beds, reduced water supply or taste and odor problems in drinking water, and increased potential for flooding because waterbodies become choked with sediment.

Congress recognized the growing problem of nonpoint source pollution in the late 1980s, and added NPS provisions to the federal law. Section 319 of the 1987 Amendments to the Clean Water Act required states to assess the nonpoint source water pollution associated with surface and groundwater within their borders and then develop and implement a management strategy to control and abate the

pollution. The first Assessment of Nonpoint Source Pollution in South Carolina accomplished this purpose. The Department's Bureau of Water manages the ongoing State NPS Management Program, which develops strategies and targets waterbodies for priority implementation of management projects. Section 319 funds various voluntary efforts, including watershed-based improvement projects, which address many aspects of the pollution prevention management measure and provide education, outreach and technical assistance to various groups and agencies. Most of the projects are implemented by cooperating agencies.

Many land activities can individually or cumulatively contribute to NPS pollution. Eight categories of NPS pollution sources have been identified as contributing to water quality degradation in South Carolina: agriculture, forestry, urban areas, marinas and recreational boating, mining, hydrologic modification, wetlands and riparian areas disturbance, land disposal, and groundwater contamination. There are programs in place, both regulatory and voluntary to address all eight categories.

Agriculture

In South Carolina, pesticides, fertilizers, animal waste, and sediment are potential sources of agricultural NPS pollution. Agricultural activities also have the potential to directly impact the habitat of aquatic species through physical disturbances caused by livestock or equipment, and through the management of water. The State has laws and regulations that prevent NPS pollution from several agricultural sources including pesticides and animal waste. Funding programs, including those under §319 grants from EPA such as the Environmental Quality Incentives Program (EQIP) and the Conservation Reserve Program (CRP), cost share funds from USDA and are used to implement best management practices that are not covered under regulations. Agriculture land acreage is quantified in the basin-wide and individual watershed evaluations.

Silviculture

Forests comprise a major portion of South Carolina's land base. As of 2009, 67% (12.9 million acres) of the State's total land area is in timberland. Silvicultural practices associated with road access, harvest, and regeneration of timber present the most significant potential for NPS pollution. Silvicultural activities have the potential to degrade the State's waters through the addition of sediment, nutrients, organics, elevated temperature, and pesticides. Erosion and subsequent sedimentation are the most significant and widespread NPS problems associated with forestry practices. Sudden removal of large quantities of vegetation through harvesting or silvicultural practices can also increase leaching of nutrients from the soil system into surface waters and groundwaters. Most water quality impacts from forestry are temporary or short-lived, can be minimized or mitigated when Best Management Practices (BMPs) are applied, and the site recovers within 2-3 years as vegetation is re-established.

Overall compliance with South Carolina's Best Management Practices for Forestry is 98.6% for timber harvesting operations. Programs to abate or control NPS pollution from forestry activities are primarily the responsibility of the S.C. Forestry Commission (SCFC) and the United States Department of Agriculture's Forest Service (USFS), with other agencies having supplementary programs. SCFC provides the results of courtesy exams of forestry operations monthly to both SCDHEC's Division of Water Quality and to forest industries. Impacts from silviculture can be significant if BMPs are not properly applied. If water quality was impacted by a forestry operation, SCDHEC may institute enforcement action under the South Carolina Pollution Control Act. The United States Department of Agriculture's Natural Resources Conservation Service (USDA-NRCS) also provides technical assistance to government, landowners, and land users. Forest land acreage is quantified in the basin-wide and individual watershed evaluations.

Urban Areas

Urbanization has been linked to the degradation of urban waterways. The major pollutants found in runoff from urban areas include sediment, nutrients, oxygen-demanding substances, heavy metals, petroleum hydrocarbons, pathogenic bacteria, and viruses. Suspended sediments constitute the largest mass of pollutant loadings to receiving waters from urban areas. Construction sites are a major source of sediment erosion. Nutrient and bacterial sources of contamination include fertilizer and pesticide usage, pet wastes, leaves, grass clippings, and faulty septic tanks. Petroleum hydrocarbons result mostly from automobile sources. From April 2000 through July 2008, statewide population growth was 11.7 percent, while the coastal counties had an increase of 19.7 percent, during the same time period. This continuing development and population growth has the potential to make urban runoff the most significant source of pollution in waters of the State in the future, particularly in South Carolina's coastal communities. Urban land acreage is quantified in the basin-wide and individual watershed evaluations.

SCDHEC has a number of statewide programs that address components of urban NPS pollution. The Bureau of Water administers four permitting programs that control runoff from new and existing urban sources. These include the Stormwater and Sediment Reduction program, Municipal Separate Storm Sewer System (MS4), Industrial NPDES Stormwater Permits, and the §401 water quality certification program (see p.27). Additional controls for urban runoff in the coastal zone are implemented by SCDHEC's Oceans and Coastal Resources Management (OCRM) through the State Coastal Zone Management Plan.

SCDHEC's Bureau of Environmental Health's Division of Onsite Wastewater Management administers the Onsite Sewage Disposal System program for the entire State, and oversees the permitting for the installation and management of septic systems. Although not associated with urban land use, this Division permits the septic systems of camping facilities if the facility is not on public sewer. The camp sewage is discharged into a public collection, treatment and disposal system if available, or an onsite wastewater treatment and disposal system (septic tank) is used.

Marinas and Recreational Boating

As with any human activity, marinas and associated recreational boating activities have the potential to impact the natural environment. Marine sanitation devices and illicit discharges can be sources of bacteria and oxygen demanding substances. Antifouling paints, exhausts, and maintenance activities can be sources of toxic metals, hydrocarbons, and other pollutants. Construction and maintenance activities, such as dredging, can negatively impact aquatic habitats and ecosystems. The physical characteristics of marinas (basin verses open water, high tidal flushing verses low or no tidal flushing, etc.) have the potential to impact water quality. To ensure that impacts associated with existing and proposed marinas are minimized to the greatest extent possible, the U.S. Army Corps of Engineers and the SCDHEC are responsible for permitting marinas in South Carolina. Within SCDHEC, the two offices that have marina permitting authority are the Office of Ocean and Coastal Resource Management (SCDHEC OCRM) and the Office of Environmental Quality Control (SCDHEC Bureau of Water). SCDHEC OCRM issues critical area permits for marinas within the critical area of the coastal zone. SCDHEC Bureau of Water issues permits for marinas at all other locations within the State and issues §401 Water Quality Certifications (see p.27) for marinas statewide. The U.S. Coast Guard and the S.C. Department of Natural Resources are responsible for managing recreational boating activity.

Mining

South Carolina's mineral production consists of non-fuel minerals that provide raw materials for construction products and a precious metal industry. Portland cement clays (kaolin and brick), sand and gravel, and crushed stone represent the majority of the total mineral value. As of June 30, 2012 there were 582 permitted mining operations in South Carolina totaling 78,282 acres (includes acreage for excavation, buffer, and mine reserves). There were 382.3 acres of mine land reclaimed during the past fiscal year, which brings the cumulative total of mine land reclaimed since the beginning of the mining and reclamation program to 18,650 acres. Surface mining has the potential to generate NPS pollution during mineral exploration, mine development extraction, transportation, mining and processing, product storage, waste disposal, or reclamation. Potential nonpoint source impacts related to mining activities generally include hydrologic modification, erosion and sedimentation, water quality deterioration, fish and wildlife disturbances, and public nuisances.

The Department's Bureau of Land and Waste Management has primary regulatory responsibility for mining activities. Within the Bureau, the Division of Mining and Solid Waste Permitting is responsible for administering and implementing the S.C. Mining Act and its associated regulations. The Mining Act serves as part of an overall management plan for NPS pollution from active mines. Mining activities and locations are identified in the appropriate watershed evaluations.

Hydromodification

Hydrologic modification (or hydromodification) is defined as stream channelization, channel modification, and dam construction. These activities can negatively impact water quality, destroy or modify in-stream habitat and increase streambank and shoreline erosion. Two State permits, implemented by the SCDHEC, are involved in the implementation of management measures for hydromodification. A critical area permit is required for coastal waters, saltwater wetlands, and beaches defined as critical areas. A navigable waters permit is required for the remainder of the State. Implementation of State policy for dam construction is similar to control of other hydromodification projects in South Carolina, requiring the same State permits and certifications. In addition, dams require a State dam safety permit or a State stormwater management and sediment reduction permit. The Department must also issue Water Quality Certifications pursuant to §401 of the Federal Clean Water Act for dam construction and hydropower operations licensed by the Federal Energy Regulatory Commission.

Wetlands

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information to the public on the extent and status of the Nation's wetlands. According to the most recent survey by the U.S. Fish and Wildlife Service (Dahl 1999), twenty-one percent of South Carolina is covered by 4,104,805 acres of wetlands. The U.S. Army Corps of Engineers implements the federal program for regulating development in wetlands with guidelines established by EPA. The Corps delineates wetlands and determines which wetlands fall under regulatory jurisdiction and require a federal permit for development. At the state level, the primary focus of wetland regulation is through the §401 Water Quality Certification. In accordance with §401 of the Federal Clean Water Act, a certification is required by the state for any Federal permit that may result in a discharge to waters of the state, including wetlands. Applications for wetland alterations may be denied or modified due to the special nature of a wetland or the functions that a wetland provides. Wetland impacts must be compensated for through restoration, enhancement, preservation, or creation and protected in perpetuity. Future development would be legally protected in these areas. Knowledge of areas that are restricted from development due to mitigation or special water classification is useful in planning future development in a watershed. Wetland acreage is quantified in the basin-wide and individual watershed evaluations.

Land Disposal

Solid Waste Landfills are permitted by the Bureau of Land and Waste Management under Regulation 61-107.19. There are three classifications of Solid Waste Landfills in South Carolina: Class One Landfills, Class Two Landfills, and Class Three Landfills. The landfill classifications are based upon the physical and chemical characteristics of the waste that is disposed in each landfill. There are currently 171 permitted landfills in South Carolina. This total represents 56 Class One Landfills that are limited to disposal of land-clearing debris; 91 Class Two Landfills that receive construction and demolition debris and waste streams that characterize at less than ten times the maximum contamination limits for drinking water;

and 24 Class Three Landfill that receive municipal solid wastes and other nonhazardous waste streams that must be characterized prior to acceptance. Solid Waste Landfills are considered point sources of pollution and are thereby required to have BOW industrial storm water permits. Storm water runoff from these landfills may have an impact on the watershed if it is not managed correctly. Regulatory authority over solid waste disposal activities resides with SCDHEC's Bureau of Land and Waste Management. All active and closed Solid Waste Landfills are identified in the appropriate watershed evaluations.

Land application of wastewater or its by-products is a form of recycling because it allows recovery of elements needed for crop production. Land application of biosolids may be beneficial and environmentally sound when applied at the correct agronomic rate. Land applying biosolids can benefit farmers by offsetting the costs of fertilizer and lime while reducing the pressure on existing landfills. SCDHEC's Bureau of Water, Division of Water Monitoring, Assessment and Protection, Groundwater Management Section conducts a program to prevent and monitor groundwater contamination from nonpoint source pollution from land application of wastewater biosolids, solids, animal manures, biosolids, and sewage sludge. Land application, which is not a discharge, requires a "no discharge" permit (ND). All active industrial and municipal land applications are identified in the appropriate watershed evaluations.

Groundwater Contamination

All aquifers in the State are potential Underground Sources of Drinking Water and are protected under the S.C. Water Classifications and Standards. Groundwaters are thus protected in a manner consistent with the SCDHEC groundwater protection strategy. Staff hydrogeologists implement a screening program for nonpoint source impacts from pits, ponds, and lagoons associated with the permitted storage, treatment, and disposal of industrial and municipal wastewaters. In cases where a groundwater impact has been identified in violation of S.C. Water Classifications and Standards, appropriate actions will be coordinated with the facility owner to ensure regulatory compliance. The hydrogeologist coordinates with the facility owner to implement source identification, contaminant extent assessments, initiation of contaminant remediation systems, and performance evaluations of corrective actions. In addition to releases from wastewater treatment systems, the staff evaluates releases from other nonpoint sources such as above ground tanks, nonregulated fuel oil tanks, spills and/or leaks. Sites with confirmed groundwater impact will be placed under a Consent Agreement or an Order. SCDHEC's South Carolina Groundwater Contamination Inventory quantifies the status of groundwater quality in South Carolina. The sites in the inventory are known groundwater contamination cases in the State, and are referenced by name and county, and updated annually.

Water Quantity

Any withdrawal of surface water over 3 million gallons in any month is required to be permitted and reported to the Department per the *Surface Water Withdrawal, Permitting, Use and Reporting Act* 49-4-10 (effect as of January 1, 2011). Any withdrawal of groundwater over 3 million gallons in any month is required to be reported to the Department and permits are required in counties designated as Capacity Use Areas (per the *Groundwater Use and Reporting Act* 49-5-10). Capacity Use Areas consist mainly of coastal counties where significant groundwater use has resulted in the lowering of groundwater levels in major aquifers.

Interbasin Transfer of Water

Requirements pertaining to the interbasin transfer of surface water between major river basins in the South Carolina are contained in the *Surface Water Withdrawal, Permitting, Use and Reporting Act* 49-4-10 and the *Surface Water Withdrawal, Permitting, Use and Reporting Regulation* R.61-119. The Regulation designates eight river basins to be used when applying the interbasin transfer (IBT) requirements of the Act. The transfer of water from one of these basins to any other river basin such that more than three million gallons of water are permanently lost to the basin of origin in any one month is considered an interbasin transfer. The primary difference between the permitting requirements for a non-interbasin transfer permit and a permit including an interbasin transfer of water is in the requirement for public notice. A permit involving an IBT must meet more stringent public notice and public hearing requirements. Public notice of an IBT permit application must be sent to a wider audience and a public hearing is required for an IBT application where it is optional for a non-IBT application. The status of interbasin transfer permits and registrations issued under the now repealed Interbasin Transfer of Water Regulation (former R. 121-10) is addressed in the *Surface Water Withdrawal, Permitting, Use and Reporting Act* 49-4-10.

Growth Potential and Planning

Land use and management can define the impacts to water quality in relation to point and nonpoint sources. Assessing the potential for an area to expand and grow allows for water quality planning to occur and, if appropriate, increased monitoring for potential impairment of water quality. Indicators used to predict growth potential include water and sewer service, road and highway accessibility, and population trends. These indicators and others were used as tools to determine areas having the greatest potential for impacts to water quality as a result of development.

Watershed boundaries extend along topographic ridges and drain surrounding surface waters. Roads are commonly built along ridge tops with the best drainage conditions. Cities often develop in proximity to ridges as a result of their plateau terrain. It is not uncommon, then, to find cities or road corridors located along watershed boundaries, and thus influencing or impacting several watersheds.

SCDHEC's Strategic Plan for 2005-2010 (www.scdhec.gov/news/releases/pdf files/Stratpln.pdf) acknowledges that growth issues are best handled at the local government level. SCDHEC's role is to work with local governments and communities to help them understand the importance of planning for smart

growth: buffers, green spaces, mass transit, subdivision and roadway planning, bike paths and bike lanes, and park and ride lots. SCDHEC can also provide assistance in helping local entities access information and provide consultation on technical issues such as the establishment of buffers and watershed stormwater planning. Many counties in the Catawba River Basin lack county wide zoning ordinances; therefore, there is little local regulatory power to influence the direction or magnitude of regional growth. The majority of municipalities have zoning ordinances in place; however, much of the growth takes place just outside the municipal boundaries, where infrastructure is inadequate. Section 208 of the Clean Water Act serves to encourage and facilitate the development and implementation of areawide waste treatment management plans. South Carolina's water quality management plans support consolidation of wastewater treatment facilities into larger regional systems.

The regional Councils of Government (COGs) located in the Catawba River Basin include the Catawba Regional Planning Council, the Santee-Lynches COG, and the Central Midlands COG. Growth potential reported in the individual watershed evaluations are updated by the COGs active in that watershed.

Watershed Protection and Restoration Strategies

SCDHEC's Bureau of Water is responsible for ensuring that South Carolina's water is safe for drinking and recreation, and suitable to support aquatic life. This section provides an overview of other important Bureau programs and strategies applied statewide to protect and restore water quality. The point and nonpoint source controls described previously assist with achieving these goals.

Under §303(d) of the Federal Clean Water Act, each state is required to provide a comprehensive inventory of impaired waters for which existing required pollution controls are not stringent enough to achieve State water quality standards or Federal Clean Water Act goals. This biennial list, commonly referred to as the "303(d) list", is the basis for targeting waterbodies for watershed-based solutions. A copy of the current §303(d) list can be obtained by contacting the Bureau of Water (803-898-4300) or online at www.scdhec.gov/water. Several Bureau programs address these impaired streams in an effort to restore them.

Total Maximum Daily Load

A Total Maximum Daily Load (TMDL) is the calculated maximum allowable pollutant loading to a waterbody at which water quality standards are maintained. A TMDL is made up of two main components, a load allocation and a wasteload allocation. A load allocation is the portion of the receiving water's loading capacity attributed to existing or future nonpoint sources or to natural background sources. The waste load allocation is the portion of a receiving water's loading capacity allocated to an existing or future point source.

A TMDL is a means for recommending controls needed to meet water quality standards in a particular water or watershed. Historically, the typical TMDL has been developed as a wasteload allocation, considering a particular waterbody segment, for a particular point source, to support setting effluent limitations. In order to address the combined cumulative impacts of all sources, broad watershed-based TMDLs are now being developed.

The TMDL process is linked to all other State water quality activities. Water quality impairments are identified through monitoring and assessment. Watershed-based investigations result in source identification and TMDL development. TMDLs form links between water quality standards and point and nonpoint source controls. Where TMDLs are established, they constitute the basis for NPDES permits and for strategies to reduce nonpoint source pollution. The effectiveness and adequacy of applied controls are evaluated through continued monitoring and assessment.

Funding for TMDL implementation is currently available with USEPA's §319 of the Clean Water Act grants. For more information, see the Bureau of Water web page www.scdhec.gov/water or call the TMDL Program at (803) 898-4300.

Antidegradation Implementation

The State's Antidegradation Policy as part of S.C. Regulation 61-68 is represented by a three-tiered approach to maintaining and protecting various levels of water quality and uses; streams included on the §303(d) list are addressed under Tier 1. Tier 1 antidegradation policies apply to all waters of the State and require that existing uses and the minimum level of water quality for those uses be maintained and protected. Tier 2 policies apply to high quality water where the water quality exceeds the mandatory minimum levels to support the Clean Water Act's goals of propagation of fish, shellfish, wildlife, and recreation in and on the water. The Department considers all the waters of the State as high quality waters. Tier 3 policies apply to the maintenance of water quality in waters that constitute an Outstanding National Resource Water and do not allow for any permanent permitted dischargers. Outstanding Resource Waters of the State are provided a higher level of protection than Tier 2, but do not meet the requirements of Tier 3.

Tier 1 protection will be implemented when applying numeric standards included in Regulation 61-68 for human health, aquatic life, and organoleptic protection as follows: if a waterbody has been affected by a parameter of concern causing it to be on the §303(d) list, then the Department will not allow a permitted net increase of loading for the parameter of concern unless the concentration will not contribute to a violation of water quality standards. This no net increase will be achieved by reallocation of existing total load(s) or by meeting applicable water quality standard(s) at the end-of-pipe. No discharge will be allowed to cause or contribute to further degradation of a §303(d) listed waterbody.

The Antidegradation Rules apply to both nonpoint source pollution and for point sources into impaired waters. Many activities contributing to nonpoint source pollution are controlled with voluntary measures. The Department implements permitting or certification programs for some of these activities and has the opportunity to ensure compliance with the Antidegradation Rules. The activities of primary concern are land development projects which are immediately adjacent to and discharge runoff or stormwater into impaired waters.

§401 Water Quality Certification Program

If a Federal permit for a discharge into waters of the State, including wetlands, is required, the Department must issue a Water Quality Certification pursuant to §401 of the Federal Clean Water Act. Certification is required for permits issued by the U.S. Army Corps of Engineers for construction in navigable waters and for deposition of dredged or fill material.

Regulation 61-101 Water Quality Certification requires SCDHEC to consider whether or not a project is water dependent; whether or not there are feasible alternatives which will have less adverse consequences on water quality and classified uses; the intended purpose of the project; and all potential water quality impacts of the project, both direct and indirect, over the life of the project. Any project with the potential to affect waters of the State must be conducted in such a manner as to maintain the specified standards and classified and existing water uses.

As a routine part of the §401 Water Quality Certification review process, the waterbody in question is identified as impaired or not impaired according to the §303(d) list. If it is impaired, the parameter of concern is noted, along with any steps required to prevent further degradation of the water quality of that waterbody.

Stormwater Program

Stormwater discharges result from precipitation during rain events. Runoff washes pollutants associated with industrial activities (including construction activity), agricultural operations, and commercial and household sites directly into streams, or indirectly into drainage systems that eventually drain into streams. The SCDHEC Stormwater Permitting Program focuses on pollution prevention to reduce or eliminate stormwater pollution. The Department has general permitting authority for stormwater discharges associated with industrial activity, including construction. General NPDES permits SCR000000 and SCR100000 for industrial and construction activities, respectively, require permittees to develop and implement stormwater pollution prevention plans that establish best management practices to effectively reduce or eliminate the discharge of pollutants via stormwater runoff. The Construction, Stormwater and Agricultural Division is responsible for issuing NPDES stormwater permits to prevent degradation of water quality as well as for issuing state sediment and erosion control permits for construction sites.

NPDES permits are issued under the authority of the federal Clean Water Act and the S.C. Pollution Control Act. The state sediment and erosion control permits are issued under the authority of two S.C. laws. The S.C. Stormwater Management and Sediment Reduction Act of 1991 addresses construction on land that is not state owned or managed. Currently, NPDES permits are required for: construction sites 1 acre and greater; construction sites in the coastal area that are within 1/2 mile of a receiving water body; and construction sites less than 1 acre on a case-by-case basis where water quality is a concern. Permits are required under the state sediment and erosion control for construction sites that are greater than 2 acres; however, there are exemptions under the law and regulation. The State Sediment and Erosion Program is somewhat duplicative of the NDPES Stormwater Program. The state program created by the 1991 Act can be delegated to local governments. SCDHEC's Office of Ocean and Coastal Resource Management (OCRM) oversees stormwater permitting in the coastal area. The Stormwater Permitting Section manages the program in the remainder of the state.

SCDHEC is assisted in implementing these regulations by many cities and counties that have been delegated to run a stormwater program under provisions of the 1991 Act and/or are owners of Municipal Separate Storm Sewer Systems (MS4) and required to run stormwater management programs under the NPDES program. MS4 will identify all impaired water bodies in a Stormwater Management Plan (SWMP). In addition, existing pollution discharge control methods will be identified and incorporated into the SWMP. Procedures, processes, and methods to control the discharge of pollutants from the MS4 into impaired waterbodies and publicly owned lakes included on the §303(d) list will be described in the SWMP. The effectiveness of these controls will be assessed and necessary corrective measures, if any, shall be developed and implemented.

NPDES MS4 permits allow communities to design SWMP that are suited for controlling pollutants in their jurisdiction. There are three population-based categories of MS4: large (population of 250,000 or greater), medium (population of 100,000 or more but less than 250,000), and small (population less than 100,000). Large and medium MS4 have been regulated since the 1990s. Those small MS4 within the boundaries of an urbanized area are called Regulated Small MS4. MS4 NPDES Permits are required for all large, medium, and regulated small MS4. MS4 can extend over more than one 10-digit watershed or even 8-digit river basin as it follows municipal boundaries, so the same permit can be listed in multiple watersheds. The MS4 receiving stream listed in the individual watershed evaluations is the mainline stream of the 10-digit hydrologic unit. The initial receiving source of the MS4 may be a smaller tributary upstream.

South Carolina Animal Feeding Operations Strategy

Among the general categories of pollution sources, agriculture ranks as the number one cause of stream and lake impairment nationwide. Many diseases can potentially be contracted from drinking water or coming into contact with waters contaminated with animal wastes. The Department uses S.C. Regulation 61-43: *Standards for the Permitting of Agricultural Animal Facilities* to address the permitting of animal feeding operations (AFOs). Implementing these regulations and their corresponding compliance efforts are a priority for the Department in order to reduce public health and environmental impacts from AFOs. There are approximately 1,100 active AFOs in S.C. There are no federally defined concentrated animal feeding operations (CAFOs) in operation in South Carolina based on the EPA definition of a CAFO in the NPDES regulations. Using the Watershed Program cycle and the division of the State into five regions, AFOs will be monitored and inspected by region. The §303(d) list will be used to prioritize the inspections. After all the inspections have been made in a region, the Department will move to the river basins in the next region in the watershed cycle. The Department is continuing to work in cooperation and coordination with the U.S. Department of Agriculture, the Natural Resources Conservation Service, the S.C. Department of Agriculture, the S.C. Soil and Water Conservation Districts, and the Clemson Extension Service.

Sewer Overflow Strategy

Sanitary sewers are designed to collect municipal and industrial wastewater, with the allowance for some acceptable level of infiltration and inflow, and transport these flows to a treatment facility. When the sewer system is unable to carry these flows, the system becomes surcharged and an overflow may occur. Sewer overflows (SSOs) have existed since the introduction of separate sanitary sewers, and most overflows are caused by inadequate operation, maintenance, and management of the collection system.

The Department encourages utilities to embrace the principals of EPA's capacity Management, Operations, and Maintenance (cMOM) program. Through this program utilities can ensure adequate funding and capacity as well as a proactive approach to operations and maintenance. Those that have

implemented cMOM programs have been able to significantly reduce or eliminate overflows from their collection systems. Additionally, the Department has adopted requirements for operation and maintenance of sewer systems in Regulation 61-9, Water Pollution Control Permits.

The Department's approach has been to shift resources historically applied to treatment plant inspections to include evaluations of pump stations and collection systems where problems are suspected. To assist in identifying water quality violations related to SSOs, staff have utilized the 303(d) list of impaired waters to identify waters impacted by fecal coliform or other appropriate pollutants and correlate those with collection systems with incidences of SSOs. The Department's Enforcement Referral Procedures Document is to be used to determine when a collection system should be referred to enforcement for SSOs. The enforcement process allows for the Department to consider actions taken by the collection system such as: timely and proper notification, containment and mitigation of discharge, voluntarily conducting self evaluations, and requests for compliance assistance. The Department will take immediate action where it has been determined that SSOs have occurred and the collection system has not made timely and proper notification.

SCDHEC's Watershed Stewardship Programs

Public participation is an important component of the Department's Watershed Water Quality Management Program. Benefits to this interaction on the local level include improved public awareness about SCDHEC water programs, and increased local interest and participation in water quality improvement. Described below are some of the Department's water programs that encourage public interest and involvement in water quality. These programs and their contacts are listed on the Department's website at www.scdhec.gov/water.

Source Water Assessment Program

A safe, adequate source of drinking water is key to development of communities and the health of citizens. The Safe Drinking Water Act (SDWA) places an emphasis on protection of sources of drinking water. As a result of the 1996 amendments to the SDWA, source water protection has become a national priority. States are required to develop a plan for assessment of source waters for all federally defined public groundwater and surface water systems.

The Source Water Assessment Program (SWAP) involves determining the boundaries of the areas that are the source of waters for public water systems. For groundwater systems, these areas are defined using groundwater flow models. For surface water systems, a distance of 15 miles upstream from the surface water intake is the designated protection area (although certain areas within the basin will be segmented as being of greater vulnerability to contamination from overland flow, groundwater contributions to surface water, and direct spills into the surface water). Known and potential sources of contamination in the delineated area must be identified, and the inventoried sources evaluated to determine the susceptibility of public water systems to such contaminants. Assessments must be made available to the public.

Local involvement is a critical factor in the success of the SWAP, and local governments, citizen groups, environmental groups, water suppliers, and the Department must all work together to increase the general public's awareness of where drinking water comes from and how to better protect sources of drinking water. Implementation of source water protection activities largely occur at the local level and local authorities may wish to base zoning and land-use planning on the source water assessments. The SWAP is a key part of the Department's watershed management approach. To avoid duplication, information gathered from existing regulatory programs and/or watershed protection efforts is utilized (e.g., ambient monitoring programs, TMDLs, etc.).

Consumer Confidence Reports

The Consumer Confidence Report (CCR) is an annual water quality report required of all community water systems. The rationale behind the CCR is that consumers have a right to know what is in their drinking water and where it comes from. These reports are to educate consumers and help them make informed choices that affect the health of themselves and their families. All CCRs are to include the following basic components:

- the water source, its location, and the availability of source water assessment plan;
- information about the water system (name and telephone number of a contact person, opportunities for public participation, and information for non-English speaking populations if applicable);
- definitions of terms and abbreviations used in the report;
- table of detected contaminants including the known or likely source of the contaminants;
- the health effects language for Maximum Contaminant Level violations and an explanation of the violation;
- information on cryptosporidium, radon, and other contaminants if applicable; and
- educational information that includes an explanation of contaminants and their presence in drinking water, an advisory for immuno-compromised people, the Safe Drinking Water Hotline telephone number, and other statements about lead, arsenic, and nitrate if applicable.

Swimming Advisory Outreach

SCDHEC tests rivers, lakes and streams all over the State. Sometimes these tests show high amounts of bacteria for some streams and rivers. DHEC puts up a swimming advisory sign where high amounts of bacteria have been found and people commonly swim. The NPS Outreach program uses this as a springboard for awareness of NPS issues and steps citizens can take to reduce their contributions to runoff pollution. For more information on the swimming advisories call the hotline at 1-800-360-5655. Information and tips on reducing NPS can be found on the swimming advisory website at www.scdhec.gov/environment/water/swim.htm.

Fish Advisory Outreach

Based on fish tissue monitoring results assessing mercury levels, SCDHEC and the Department of Natural Resources work together to provide annual fish consumption advisories that tell you the right amounts and types of fish to eat in South Carolina. The advisories particularly focus on providing statewide advice for at-risk women and children. For more information and the most current advisories, please visit http://www.scdhec.gov/fish . If you have further questions or would like a hard copy of the advisories, call SCDHEC's toll-free Fish Consumption Advisory hotline at (888) 849-7241.

Champions of the Environment

Champions of the Environment encourages, enables and recognizes youth environmental eeducation projects that develop awareness, promote behavior change or improve and protect our water, air and land. Champions has been rewarding South Carolina's kindergarten through twelfth-grade students and teachers since 1993. Grants and cash awards enabled schools and communities to participate in activities such as protecting nesting sea turtles, reducing a school's carbon footprint, and protecting water quality; all positively impacting the environment and developing young, environmental stewards. Champions is a unique public-private partnership between DHEC, industry partners, and the media. For more information contact the Champions of the Environment coordinator at 803-898-4300 or visit www.scdhec.gov/environment/water/champion.htm.

Clean Water State Revolving Fund

Congress created the Clean Water State Revolving Fund (SRF) in 1987, to replace the §201 Construction Grants program. In doing so, 'state banks' were created to lend money for virtually any type of water pollution control infrastructure project. Project types include construction of wastewater treatment systems and nonpoint source pollution control. The interest rate on the loans is always below the current market rate. As repayments are made on the loans, funds are recycled to fund additional water protection projects. The vast majority of the SRF funds have been used for the construction of traditional municipal wastewater treatment systems. Because of its inherent flexibility, the SRF program is well suited to accommodate the watershed approach.

SRF loans are available to units of state, local, and regional government, and special purpose districts. South Carolina law prevents loans from being made directly to private organizations and individuals. Local governments such as cities and counties and other units of government such as Soil and Water Conservation Districts, Councils of Government, and Water and Sewer Districts are encouraged to apply for SRF loans for nonpoint source projects. Nonpoint source projects may include construction and maintenance of stormwater management facilities, establishment of a stormwater utility, purchase of land for wetlands and riparian zones, and implementation of source water protection assessments. For more information, view the State Revolving Fund web site www.scdhec.gov/srf .

Citizen-Based Watershed Stewardship Programs

Throughout the Catawba River Basin, water quality is a common interest among citizen groups. The issues and membership of these groups vary widely. Some of the citizen groups interested in water quality in the Catawba River Basin are described below. To view the most current listing, visit our webpage at www.schdhec.gov/watershed .

Catawba RiverKeeper Foundation

Formed in 1997, the Catawba Riverkeeper Foundation (CRF) advocates for the health, protection, and enjoyment of the Catawba River watershed in North and South Carolina. A licensed member of the national WaterKeeper Alliance, Inc., the CRF trains and leads five locally based Covekeeper Programs on Lake Wylie and Lake Wateree in South Carolina along with three other North Carolina lakes. The Foundation also supports Covewatcher, Streamwatcher, Waterwatcher and Muddy Water Watch volunteer-based programs and operates a youth kayaking program.

Catawba/Wateree River Basin Advisory Commission

The Catawba/Wateree River Basin Advisory Commission was created in 2004 by statute in North and South Carolina. The Commission is comprised of 17 members including legislative representatives from both states as well as representatives from Duke Energy Carolinas, a South Carolina water or sewer utility, the bi-state Catawba River task force, the North Carolina marine commissions, a South Carolina lake homeowners' association, Carolina's Partnership Inc., and a North Carolina land conservation trust. The Commission meets quarterly to discuss water- related issues in the basin and to provide guidance and make recommendations regarding the use, stewardship, and enhancement of the natural resources in the basin for the purposes of integrated river basin management.

Catawba Scenic River Advisory Commission

The Scenic Rivers program, managed by the SC Department of Natural Resources, conserves the state's river heritage through the proper management of the natural and cultural character of the state's river corridors. In 2008, the 30-mile section of the Catawba River from the base of the Lake Wylie dam to the SC 9 bridge was designated as a State Scenic River. An advisory council consisting of local landowners, river users, community interests, and SCDNR officials was formed to create a management plan for this section of the river. The plan has been created using a process in which local citizens identify their vision and goals for the river, discuss and define issues of concern and then seek resolutions to achieve their vision. Once the management plan is complete, it will become the guide for ongoing activities for the advisory council.

Catawba-Wateree Water Management Group

The Catawba-Wateree Water Management Group identifies, funds, and manages projects that help extend and enhance the capacity of the Catawba and Wateree Rivers to meet human water needs while maintaining the ecological health of the waterway. Incorporated in late 2007, this 501(c)(3) non-profit group came out of the 3½-year stakeholder process associated with Duke Energy's re-licensing of the Catawba-Wateree Hydro Project. Projects are funded by dues from voluntary members representing Duke and the large water suppliers that use storage in the 11-lake Catawba-Wateree system.

Lake Wateree Association and Wateree Homeowners Association

The Lake Wateree Association and Wateree Homeowners Association are non-profit organizations established by property owners on the Kershaw County and Fairfield County sides of Lake Wateree, respectively. Both organizations work closely together to provide a forum for discussing and vocalizing homeowner's concerns related to the health and protection of Lake Wateree.

Lake Wateree Water Watch

WaterWatch is joint water quality monitoring effort of the Lake Wateree Association and the Wateree Homeowners Association. The organization currently works with the University Of South Carolina to conduct water quality monitoring at 20 sites around Lake Wateree. WaterWatch provides quarterly reports on parameters including dissolved oxygen, pH, temperature, and turbidity.

Catawba Basin Land Trusts

Several Land Trusts acquire property or easements in the Catawba basin to protect water quality and wildlife habitat, to provide recreational resources and to improve aesthetics and quality of life. Active Land Trusts in the basin include the Katawba Valley Land Trust, the Nation Ford Land Trust, and the Congaree Land Trust.

Lake Wylie Marine Commission

The Lake Wylie Marine Commission is a federally established body of concerned citizens appointed by the governments of the three counties that border Lake Wylie: Gaston and Mecklenburg Counties in North Carolina and York County in South Carolina. The Commission represents citizens of those counties and other lake stakeholders to establish public policy and regulations to protect and preserve Lake Wylie and its shoreline, to encourage its safe use and enjoyment, and to protect the lake as a high quality resource and asset for the region. Specifically, the Commission is focused on shoreline protection, public policy, public education, and partnership-building. The Commission monitors issues such as water quality, construction permits, piers and shoreline stabilization permits, missing and damaged buoys, environmental concerns such as erosion and sedimentation issues at construction sites, toxic spills, and notification of spills, among others.

Catawba River Basin Description

The South Carolina portion of the ***Catawba River Basin (hydrologic units 03050101 and 03050103)*** is located in York, Lancaster, Chester, and Fairfield Counties, and encompasses 1,067 square miles that extend across the Piedmont region. The South Carolina portion of the Catawba River Basin encompasses 7 watersheds and 682,634 acres of which 59.5% is forested land, 22.9% is agricultural land, 14.2% is urban land, 2.1% is water, 0.9% is forested wetland, and 0.4% is barren land. There are a total of 4,800.0 stream miles in the entire Catawba River Basin (3,410.9 stream miles within South Carolina), and 16,504.5 acres of lake waters (14,535.6 acres within South Carolina)**.**

The Catawba River originates in North Carolina and flows through Lake Wylie and into South Carolina. Allison Creek flows into the midlake region of Lake Wylie within South Carolina. The Catawba River flows out of Lake Wylie and is joined by Sugar Creek, Twelvemile Creek, and Cane Creek before draining into Fishing Creek Reservoir. The Catawba River flows out of Fishing Creek Reservoir and joins with Fishing Creek and flows into Great Falls Reservoir. The river then joins with Camp Creek and Rocky Creek to form Cedar Creek Reservoir. Cedar Creek flows into the Catawba River just below the Cedar Creek Reservoir dam. The Catawba River merges with Big Wateree Creek to form the Wateree River Basin.

Physiographic Regions

The State of South Carolina has been divided into six Major Land Resource Areas (MLRAs) by the USDA Soil Conservation Service. The MLRAs are physiographic regions that have soils, climate, water resources and land uses in common. The physiographic region that defines the Catawba Basin is as follows:

The **Piedmont** is an area of gently rolling to hilly slopes with narrow stream valleys dominated by forests, farms and orchards; elevations range from 375 to 1,000 feet.

Land Use/Land Cover

General land use/land cover mapping for South Carolina was derived from the 2006 National Land Cover Data (NLCD). The dataset is based on nationwide Landsat Thematic Mapper (TM) multispectral satellite images (furnished through the Multi-Resolution Land Characteristics (MRLC) consortium, coordinated by USEPA) using image analysis software to inventory the Nation's land classes. The NLCD are developed by the USGS (EROS Data Center) using TM image interpretation, air photo interpretation, National Wetland Inventory data analysis, and ancillary data analysis.

Urban land is characterized by man-made structures and artificial surfaces related to industrial, commercial, and residential uses, and vegetated portions of urban areas such as recreational grass lands and industrial facility lawns.

Agricultural/Grass land is characterized by row crops, pastures, orchards, vineyards, and hay land, and includes grass cover in fallow, scrub/shrub, forest clearcut and urban areas.

Forest land is characterized by deciduous and evergreen trees (or a mix of these), not including forests in wetland settings, generally greater than 6 meters (approximately 20 feet) in height, with tree canopy of 25-100% cover.

Forested Wetland is saturated bottomland, mostly hardwood, forests primarily composed of wooded swamps occupying river floodplains, moist marginal forests, and isolated low-lying wet areas, located predominantly in the Coastal Plain.

Nonforested Wetland is saturated marshland, most commonly located in coastal tidelands and in isolated freshwater inland areas, found predominantly in the Coastal Plain.

Barren land is characterized by a nonvegetated condition of the land, both natural (rock, beaches, nonvegetated flats) and man-induced (rock quarries, mines, and areas cleared for construction in urban areas or clearcut forest areas).

Water (non-land) includes both fresh (inland) and saline (tidal) waters.

Soil Types

The individual soil series for the Catawba River Basin are described as follows.

Appling soils are well drained, deep soils, brownish to red, firm clay in the main part of the subsoil, found on narrow to broad ridges.

Badin soils are moderately deep, well drained, moderately permeable, clayey soils that formed in material weathered from Carolina Slate or other fine grained rock, on ridgetops and side slopes.

Cecil soils are deep, well drained, gently sloping to sloping soils that have red subsoil.

Georgeville soils are gently sloping to sloping, well drained and moderately well drained soils.

Goldston soils are dominantly sloping to steep, well drained to excessively drained soils.

Helena soils are gently sloping to sloping, moderately well drained to well drained soils.

Herndon soils are gently sloping to sloping, well drained and moderately well drained soils.

Hiwassee soils are well drained, moderately sloping soils with clayey subsoil, moderately deep.

Iredell soils are well drained to somewhat poorly drained, shallow to deep soils, mainly brownish, firm to extremely firm clay loam to clay in the subsoil, on narrow and medium ridges.

Madison soils are well drained, moderately sloping soils, with clayey subsoil, moderately deep.

Mecklenburg soils are deep to moderately deep, gently sloping to strongly sloping, well drained to somewhat poorly drained soils with a loamy surface layer and a clayey subsoil and underlain by decomposed bedrock.

Pacolet soils are well drained, moderately steep soils with clayey subsoil, moderately deep.

Wilkes soils are dominantly strongly sloping to steep, well drained soils.

Slope and Erodibility

The definition of soil erodibility differs from that of soil erosion. Soil erosion may be more influenced by slope, rainstorm characteristics, cover, and land management than by soil properties. Soil erodibility refers to the properties of the soil itself, which cause it to erode more or less easily than others when all other factors are constant.

The soil erodibility factor, K, is the rate of soil loss per erosion index unit as measured on a unit plot, and represents an average value for a given soil reflecting the combined effects of all the soil properties that significantly influence the ease of soil erosion by rainfall and runoff if not protected. The K values closer to 1.0 represent higher soil erodibility and a greater need for best management practices to minimize erosion and contain those sediments that do erode. The range of K-factor values in the Catawba River Basin is from 0.20 to 0.28.

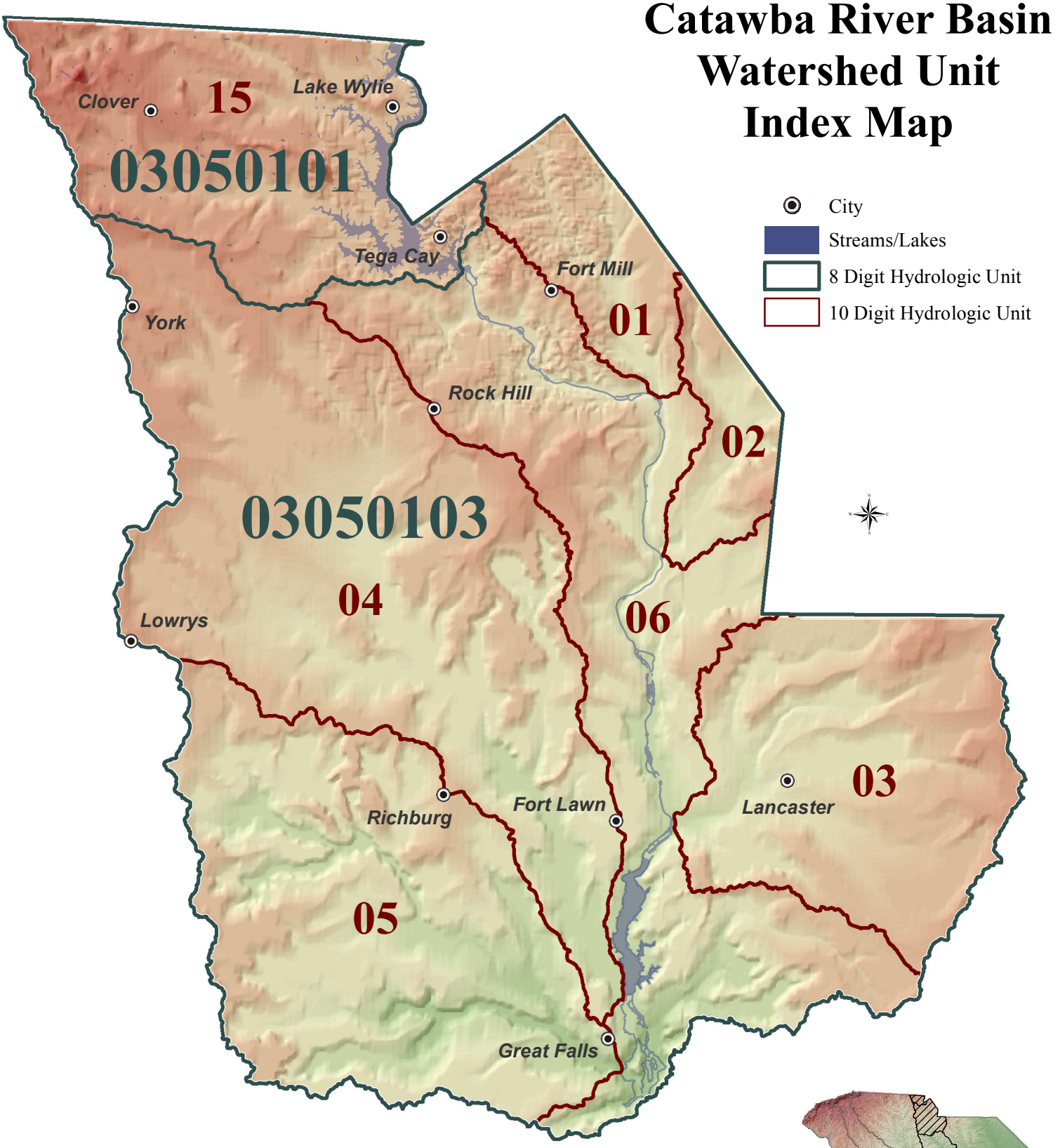
Fish Consumption Advisory

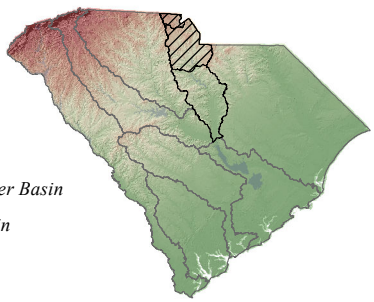
At the time of publication, a fish consumption advisory issued by SCDHEC is in effect for portions of Lake Wylie, the Catawba River, Fishing Creek Reservoir, and Cedar Creek Reservoir advising people to limit the amount of some types of fish consumed from these waters. Fish consumption advisories are updated annually in the spring. For background information and the most current advisories please visit www.scdhec.gov/fish. For more information or a hard copy of the advisories, call SCDHEC's Fish Consumption Advisory toll-free hotline at (888) 849-7241.

Climate

Normal yearly rainfall in the Catawba River area during the period of 1971 to 2000 was 47.3 inches, according to South Carolina's **30-year** climatological record. Data compiled from National Weather Service stations in Ft. Mill, Winthrop, Kershaw, Great Falls, Chester, and Catawba were used to determine the general climate information for the Catawba River area. The highest seasonal rainfall occurred in the summer with 12.86 inches; 10.68, 11.66, and 11.31 inches of rain fell in the fall, winter, and spring, respectively. The average annual daily temperature was 60.7°F. Summer temperatures averaged 77.8 °F, and fall, winter, and spring mean temperatures were 61.4 °F, 43.4 °F, and 60.3 °F, respectively.

Catawba River Basin Watershed Unit Index Map





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South Carolina Department of Health and Environmental Control

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Watershed Evaluations

03050101-15

(Catawba River/Lake Wylie)

General Description

The South Carolina portion of watershed 03050101-15 (formerly 03050101-180, 190) is located in York County and consists primarily of the ***Catawba River*** and its tributaries as it flows through Lake Wylie. The watershed occupies 88,527 acres of the Piedmont region of South Carolina. Land use/land cover in the watershed includes: 53.7% forested land, 25.1% agricultural land, 14.1% urban land, 6.5% water, 0.5% forested wetland (swamp), and 0.1% barren land.

The Catawba River originates in North Carolina and flows through Lake Wylie into South Carolina in this watershed. Lake Wylie is used for both power generation and recreation. Tributaries draining into and forming arms of Lake Wylie in South Carolina include Catawba Creek, Mill Creek, Crowders Creek (South Fork Crowders Creek, Rocky Branch, Brown Creek, Beaverdam Creek, Camp Run), Torrence Branch, and Allison Creek. Allison Creek originates near the Town of Clover and is joined by Morris Branch, Calabash Branch (Walker Branch), Grist Branch, Johnson Branch (Rock Branch), and Big Branch before forming an arm of Lake Wylie near the City of York. Little Allison Creek is also impounded and flows into the Allison Creek arm of the lake. There are a total of 618.0 stream miles in the entire Catawba River/Lake Wylie watershed (369.8 miles within South Carolina) and 8,288.1 acres of lake waters (7,957.3 acres within South Carolina), all classified FW.

Surface Water Quality

Station	Type	Class	Description
CW-197	P/INT	FW	LAKE WYLIE ABOVE MILL CREEK ARM AT END OF S-46-557
CW-192	S/W	FW	SOUTH FORK CROWDERS CREEK AT S-46-79 4.5 MI NW OF CLOVER
CW-152	P/SPRP	FW	CROWDERS CREEK AT US 321 0.5 MI N OF NC STATE LINE
CW-023	P/SPRP	FW	CROWDERS CREEK AT S-46-564 NE OF CLOVER
CW-024	W/BIO	FW	CROWDERS CREEK AT S-46-1104
CW-105	S/W	FW	BROWN CREEK AT S-46-226, 0.3 MI W OF OLD N.MAIN ST. IN CLOVER
RS-06020	RS06/BIO	FW	BEAVERDAM CREEK AT BRIDGE AT S-46-64 32 MI ENE OF CLOVER
CW-696	BIO	FW	BEAVERDAM CREEK AT S-46-114
CW-153	S/W	FW	BEAVERDAM CREEK AT S-46-152 8 MI E OF CLOVER
CW-027	S/SPRP	FW	LAKE WYLIE, CROWDERS CK ARM AT SC 49 AND SC 274
CW-245	W	FW	LAKE WYLIE, CROWDERS CK ARM –1ST POWERLINE UPSTR.OF MAIN POOL
CW-198	P/W	FW	LAKE WYLIE, OUTSIDE MOUTH OF CROWDERS CREEK ARM
CW-171	S/W	FW	ALLISON CREEK AT US 321, 3.1 MI S OF CLOVER
CW-134	S/W	FW	CALABASH BRANCH AT S-46-414 2.5 MI SE OF CLOVER
CW-249/CW-694	INT/BIO	FW	ALLISON CREEK AT S-46-114
CW-200	S/W	FW	LAKE WYLIE AT SC 274 , 9 MI NE OF YORK
CW-709	BIO	FW	LITTLE ALLISON CREEK AT SC 274
CW-201	P/W	FW	LAKE WYLIE, NORTH LAKEWOOD SD AT EBENEZER ACCESS
RL-06433	RL06	FW	LAKE WYLIE, 0.5MI W OF TEGA CAY
CW-230	W/INT	FW	LAKE WYLIE, AT DAM UNDER POWERLINES

Lake Wylie –There are eight SCDHEC monitoring sites along Lake Wylie. Aquatic life and recreational uses are fully supported at ***CW-197***, in the upper region of the lake, and significant decreasing trends in turbidity, total phosphorus concentration, and total nitrogen concentration suggest improving conditions for these parameters.

Moving downlake to the Crowders Creek arm of the lake and ***CW-027***, aquatic life uses are fully supported; however, there are significant decreasing trends in dissolved oxygen concentration. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. Aquatic life and recreational uses are fully supported at ***CW-245.*** Aquatic life and recreational uses are fully supported at ***CW-198***, and significant decreasing trends in turbidity, total phosphorus concentration, and total nitrogen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH at this site.

In the Allison Creek arm of the lake and ***CW-200***, aquatic life uses are not supported due to total phosphorus concentration and chlorophyll-a excursions. In addition, there is a significant increasing trend in five-day biochemical oxygen demand. Although pH excursions occurred, they were typical of values seen in lake systems and were considered natural, not standards violations. Recreational uses are fully supported at this site. Aquatic life and recreational uses are fully supported at ***CW-201***, and significant decreasing trends in five-day biochemical oxygen demand, turbidity, total phosphorus concentration, and fecal coliform bacteria suggest improving conditions for these parameters.

Aquatic life and recreational uses are fully supported at ***RL-06433*** near the base of the lake**.** Aquatic life uses are not supported at ***CW-230***, near the dam, due to copper excursions. In addition, there is a significant increasing trend in five-day biochemical oxygen demand. There is a significant increasing trend in pH. Although pH excursions occurred, they were typical of values seen in lake systems and were considered natural, not standards violations. Recreational uses are fully supported at the dam site.

South Fork Crowders Creek (CW-192) – Aquatic life and recreational uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and total phosphorus concentration.

Crowders Creek – There are three SCDHEC monitoring sites along Crowders Creek, and all sites are not supported for recreational uses due to fecal coliform bacteria excursions. At the upstream site ***(CW-152)***, aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration and a significant increasing trend in five-day biochemical oxygen demand. Significant decreasing trends in total phosphorus and total nitrogen concentration suggest improving conditions for these parameters. At the midstream site ***(CW-023)***, aquatic life uses are fully supported and significant decreasing trends in turbidity, total phosphorus concentration, and

total nitrogen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH at this site. Aquatic life uses are also fully supported at the downstream site ***(CW-024).***

Brown Creek (CW-105) - Aquatic life uses are fully supported; however, there is a significant increasing trend in five-day biochemical oxygen demand. Recreational uses are not supported due to fecal coliform bacteria excursions.

Beaverdam Creek – There are three SCDHEC monitoring sites along Beaverdam Creek. At the upstream site ***(RS-06020)***, aquatic life uses are partially supported based on macroinvertebrate community data. Recreational uses are not supported due to fecal coliform bacteria excursions. Although macroinvertebrate communities appeared to be impacted at the midstream site ***(CW-696)***, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year. At the downstream site ***(CW-153),*** aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration and significant increasing trends in five-day biochemical oxygen demand and turbidity. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Allison Creek – There are two SCDHEC monitoring sites along Allison Creek and recreational uses are not supported at either site. At the upstream site ***(CW-171)***, aquatic life uses are fully supported; however, there is a significant increasing trend in five-day biochemical oxygen demand. At the downstream site ***(CW-249)***, aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and total phosphorus concentration. Although macroinvertebrate communities appeared to be impacted at ***CW-694***, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year.

Calabash Branch (CW-134) - Aquatic life uses are fully supported; however, there is a significant increasing trend in turbidity. Recreational uses are not supported due to fecal coliform bacteria excursions. Significant decreasing trends in total phosphorus and fecal coliform bacteria suggest improving conditions for these parameters.

Little Allison Creek (CW-709) - Although macroinvertebrate communities appeared to be impacted at this site, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year.

*A fish consumption advisory has been issued by the Department for PCBs and includes Lake Wylie within this watershed (see advisory p.*38*).*

Natural Swimming Areas

FACILITY NAME	***PERMIT #***
RECEIVING STREAM	***STATUS***
EBENEZAR PARK	46-N17
LAKE WYLIE	ACTIVE

NPDES Permitted Activities

Active NPDES Facilities

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
LAKE WYLIE	SC0026743
TEGA CAY #2 WWTP	MINOR DOMESTIC
LAKE WYLIE	SC0026751
TEGA CAY #3 & #4 WWTP	MINOR DOMESTIC
BEAVERDAM CREEK	SC0032662
BEAVER CREEK MHP	MINOR DOMESTIC
BEAVERDAM CREEK	SC0028321
PHARR YARNS/CLOVER DIVISION	MINOR INDUSTRIAL
CROWDERS CREEK	SCG730476
CURTIN BROS. CONTRACTING INC./RIDDLE MILL PIT	MINOR INDUSTRIAL
TORRENCE BRANCH	SCG730591
MCCALL GRADING CO./MCCALL MINE	MINOR INDUSTRIAL
MILL CREEK	SC0037605
LAKE WYLIE MHP	MINOR DOMESTIC
ALLISON CREEK ARM OF LAKE WYLIE	SC0004278
DUKE POWER CO./CATAWBA NUCLEAR STATION	MAJOR INDUSTRIAL

Municipal Separate Storm Sewer Systems (MS4)

RECEIVING STREAM	***NPDES#***
MUNICIPALITY	***MS4 PHASE***
RESPONSIBLE PARTY	***MS4 SIZE***
IMPLEMENTING PARTY	
LAKE WYLIE/CATAWBA RIVER	SCR039103
TEGA CAY	PHASE II
TEGA CAY	SMALL MS4
TEGA CAY	

LAKE WYLIE/CATAWBA RIVER	SCR039104
UNINCORPORATED AREAS	PHASE II
YORK COUNTY	SMALL MS4
YORK COUNTY	

Nonpoint Source Permitted Activities

Land Disposal Activities

Landfill Facilities

LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
DEER CREEK COMPOSTING SITE COMPOSTING	462672-3001 ACTIVE
MCCALL DEER CREEK DR. LANDFILL C&D	462672-1701 ACTIVE
TEGA CAY 126, INC. CONSTRUCTION	462436-1201 INACTIVE
TEGA CAY 126, INC. C&D	---------- INACTIVE
DUKE POWER CO. INDUSTRIAL	463303-1601 ACTIVE
DUKE POWER CO. INDUSTRIAL	---------- INACTIVE

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RIVER HILLS MAINTENANCE COMPOSTING FACILITY COMPOSTING	462497-3001 INACTIVE
RIVER HILLS COMM. ASSOC. COMPOSTING FACILITY COMPOSTING	462497-3002 ACTIVE

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
MCCALL GRADING COMPANY, INC. MCCALL MINE	0926-91 GRAVEL
CURTIN BROS. CONTRACTING INC. RIDDLE MILL PIT	1345-91 SAND; SAND/CLAY

Water Quantity

WATER USER ***WATERBODY***	***REGULATED CAP. (MGD)*** ***PUMPING CAPACITY (MGD)***
CITY OF ROCK HILL LAKE WYLIE	30.0 45.0

Growth Potential

There is a high potential for growth in this watershed, which contains the Lake Wylie community and the Cities of Tega Cay and Clover. Residential development along the frontage of Lake Wylie continues to increase, with densest areas located in Tega Cay and Clover, the River Hills development in the Lake Wylie community, and the area between the City of Rock Hill and Lake Wylie. Residential development away from the lake is increasing but remains scattered. Commercial development continues to occur in the Lake Wylie community along S.C. Hwys 49 and 274 and around Clover and Tega Cay. Another major land use in the area is the Catawba Nuclear Station on the west side of the lake. Transportation projects, which will have an impact on future growth, include the widened Buster Boyd Bridge and S.C. Hwy 49, both of which provide improved access into the Charlotte, N.C. urban area and encourage further residential and commercial growth along the western shore of the lake. There are also a few areas of intensive farming in the rural portion of the watershed. Water and sewer services are available in the immediate vicinity of Clover and Tega Cay and the River Hills development in the Lake Wylie community. Water has also been extended along S.C. Hwy 274 near Lake Wylie. Future growth should continue to be centered on the S.C. Hwys 49 and 274 corridors near Lake Wylie and around Clover and Tega Cay. Residential growth between Clover and the lake will continue to scattered throughout the rural areas. The Town of Clover is the only municipality in York County that has a sewer system without its own treatment capacity. The City has shut down its waste treatment plant and tied in with Gastonia, N.C.

Watershed Restoration and Protection

Total Maximum Daily Loads (TMDLs)

TMDL was developed by SCDHEC and approved by EPA for ***Beaverdam Creek*** water quality monitoring site CW-153 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary source of fecal coliform to the stream was determined to be runoff from grazed pastureland in the watershed. The second largest source was runoff from built-up land. The TMDL states that a 77% reduction in fecal coliform loading is necessary for the stream to meet the recreational use standard.

A TMDL was also developed by SCDHEC and approved by EPA for ***Brown Creek*** (a tributary of Beaverdam Creek) water quality monitoring site CW-105 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the stream were determined to be failing septic systems, possible direct discharges, and runoff from built-up areas. The TMDL states that a 98.4% reduction in fecal coliform loading from these sources is necessary for the stream to meet the recreational use standard.

A TMDL was developed by SCDHEC and approved by EPA for ***Allison Creek*** water quality monitoring site CW-171 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the stream were determined to be runoff from agricultural activities, cattle-in-streams,

and failing septic systems in the watershed. The TMDL states that a 67% reduction in fecal coliform loading from urban sources is necessary for the stream to meet the recreational use standard.

A TMDL was also developed by SCDHEC and approved by EPA for ***Calabash Creek*** (a tributary of Allison Creek) water quality monitoring site CW-134 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary source of fecal coliform to the stream was determined to be runoff from the urban land in the watershed. The TMDL states that a 74% reduction in fecal coliform loading from urban sources is necessary for the stream to meet the recreational use standard.

Three TMDLs were developed by NCDENR using the WARMF Model and approved by the EPA for ***Crowders Creek*** and ***South Fork Crowders Creek*** in Gaston County, NC and York County, SC (monitoring sites CW-023, CW-024, and CW-192). These TMDLs determine the maximum amount of fecal coliform bacteria that Crowders Creek and South Fork Crowders Creek at each site can receive from all pollution sources and still meet water quality standards. At the time the TMDL was approved, there were five permitted continuous dischargers of fecal coliform in the North Carolina portion of the watershed. Land application of biosolids (Sludge byproducts of the wastewater treatment.) was also permitted for the watershed within North Carolina. Also there were several NPDES permitted stormwater dischargers (MS4s) in the North Carolina portion of the watershed. Potential sources of fecal coliform pollution in the watershed contributing to the impairment of Crowders Creek include leaking sewers, sanitary sewer overflows (SSOs), failing septic systems, and possibly livestock. The TMDLs require a reduction of 79% in the current load from all MS4s and nonpoint sources within the watershed.

A TMDL was developed by SCDHEC using the load duration methodology and approved by the EPA for the lower portion of ***Allison Creek*** in York County (monitoring site CW-249). This TMDL determines the maximum amount of fecal coliform bacteria that Allison Creek at CW-249 can receive from pollution sources and still meet water quality standards. At the time the TMDL was approved there were no permitted dischargers of fecal coliform in the watershed and none of the watershed had been designated as part of a MS4. Potential sources of fecal coliform pollution in the watershed contributing to the impairment of lower Allison Creek include livestock, wildlife, and possibly failing septic systems. The TMDL requires a reduction of 81% in the current load to the creek to meet standards. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

Special Projects

TMDL Implementation for Fecal Coliform Bacteria in Allison Creek, Calabash Branch, Beaverdam Creek, and Brown Creek

The targeted areas in Allison Creek, Calabash Branch, Beaverdam Creek, and Brown Creek have been documented by SCDHEC as violating the water quality standard for fecal coliform. A Total Maximum Daily Load (TMDL) has since been developed and approved for these areas. The objective of this project is to reduce fecal coliform loading in Allison Creek at CW-171 by 67%, in

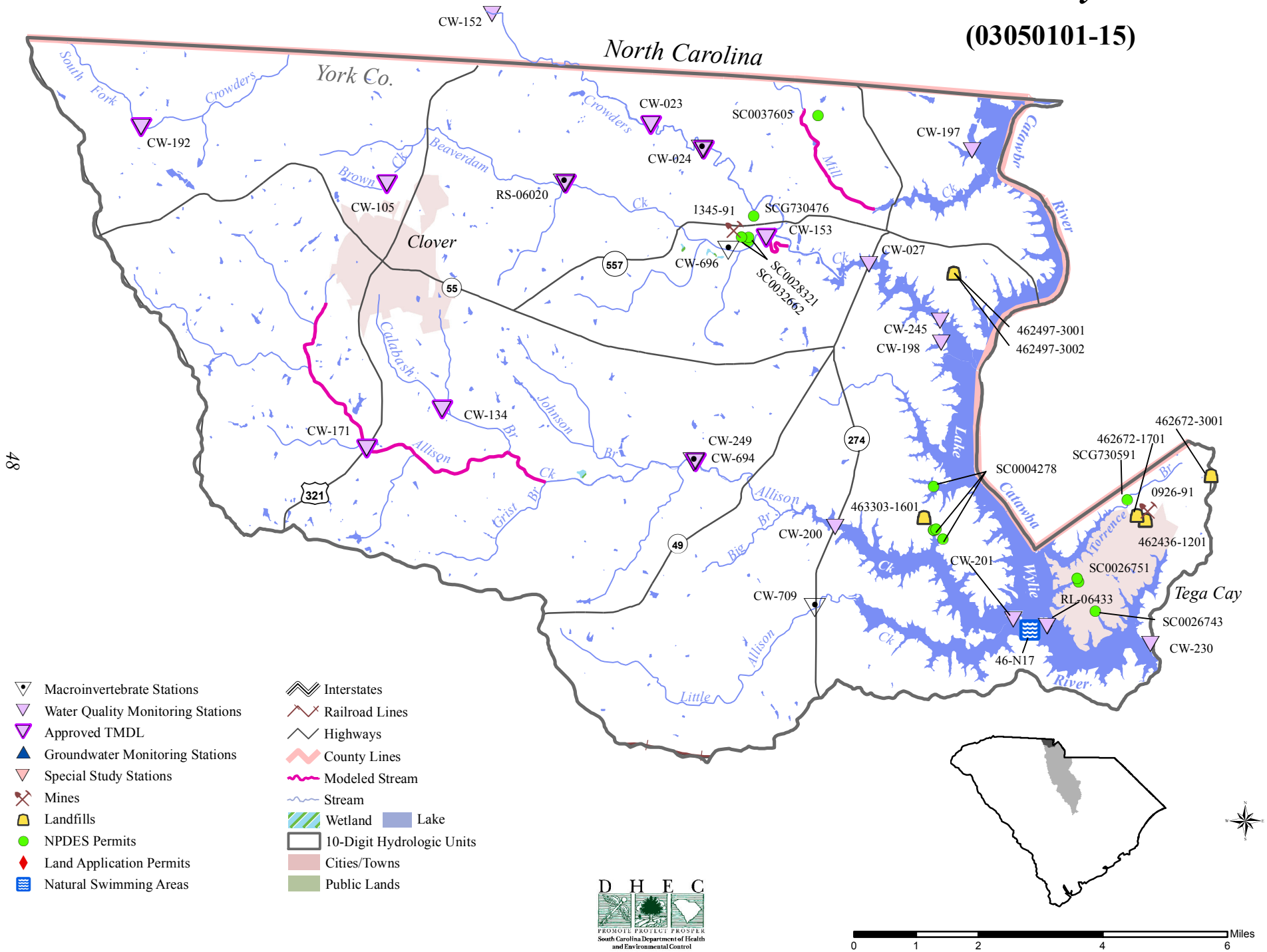
Calabash Branch at CW-134 by 74%, in Beaverdam Creek at CW-153 by 77%, and in Brown Creek at CW-105 by 98.4% so that these watersheds meet the water quality standards for fecal coliform bacteria. There are several tools available for implementing these nonpoint source TMDLs, including nonpoint source outreach educational activities and materials. Section 319 grant funding through SCDHEC may be available to aid in implementing best management practices (BMP) within the areas of concern outside of areas deemed as Municipal Separate Storm Systems (MS4s) by the National Pollutant Discharge Elimination System (NPDES) Phase II. The Project will characterize possible sites of fecal coliform loading by using local knowledge, illicit discharge sampling, and spatial data analysis, while evaluating existing BMPs within the watershed. SCDHEC will continue to monitor water quality in these streams to evaluate the effectiveness of these measures.

"No Discharge" Designation for Lake Wylie

In May 2000, Lake Wylie was designated a ***No Discharge*** lake for marine toilets due to its importance from both an economical and recreational standpoint, which includes providing a reliable drinking water source for the City of Rock Hill. Federal and state law prohibit the discharge of untreated sewage into the waters of the United States, but treated sewage from marine toilets previously had been permitted, provided it has undergone some treatment and disinfection. Because microorganisms can continue to thrive after rudimentary treatment by on-board marine toilets, discharges may be completely banned from such waterbodies to protect the public's health, safety, and welfare. Federal law allows states to completely ban discharges if it can be demonstrated that adequate and accessible pumpout facilities are available. The law banning discharges applies to large vessels with on-board toilets. http://www.dnr.sc.gov/marine/vessel/sclaw.html

Catawba River/Lake Wylie Watershed

(03050101-15)



03050103-01

(Sugar Creek)

General Description

The South Carolina portion of watershed 03050103-01 (formerly 03050103-020) is located in York and Lancaster Counties and consists primarily of ***Sugar Creek*** and its tributaries. The watershed occupies 29,229 acres of the Piedmont region of South Carolina. Land use/land cover in the watershed includes: 47.7% forested land, 37.0% urban land, 12.6% agricultural land, 1.3% barren land, 0.8% forested wetland (swamp), and 0.6% water.

Sugar Creek originates in North Carolina, near the City of Charlotte, and accepts drainage from Flint Hill Branch, Little Sugar Creek, and McAlpine Creek before reaching Steele Creek. Steele Creek also originates in North Carolina and accepts drainage from Blankmanship Branch and Jackson Branch before flowing through the Town of Fort Mill and into Sugar Creek. There are a total of 799.0 stream miles in the entire Sugar Creek watershed (129.1 miles within South Carolina) and 876.7 acres of lake waters (241.7 acres within South Carolina), all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CW-247	W/SPRP	FW	SUGAR CREEK AT MECKLENBURG CO.RD 51 (IN N.C.)
CW-246/CW-627	BIO	FW	SUGAR CK UPSTREAM OF CONFLUENCE WITH MCALPINE CREEK
CW-226	P/SPRP	FW	MCALPINE CREEK AT US 521 IN NC
CW-064	S/W/BIO	FW	MCALPINE CREEK AT S-29-64
CW-009	S/W	FW	STEELE CREEK AT S-46-22 N OF FORT MILL
CW-203	W	FW	STEELE CREEK AT S-46-98
CW-681	BIO	FW	STEELE CREEK AT BY-PASS US 21
CW-011	S/W	FW	STEELE CREEK AT S-46-270
CW-013	P/W	FW	SUGAR CREEK AT SC 160 E OF FORT MILL
CW-036	S/INT	FW	SUGAR CREEK AT S-46-36

Sugar Creek – There are four SCDHEC monitoring sites along Sugar Creek. At the furthest upstream site ***(CW-247)***, aquatic life uses are fully supported. Recreational uses are not supported at this site due to fecal coliform excursions. Compounding this is a significant increasing trend in fecal coliform bacteria. Moving downstream to ***CW-246***, aquatic life uses are partially supported based on macroinvertebrate community data.

Aquatic life and recreational uses are fully supported at ***CW-013***; however, there is a significant increasing trend in total nitrogen concentration. Significant decreasing trends in turbidity and fecal coliform bacteria suggest improving conditions for these parameters. At the furthest downstream site ***(CW-036)***, aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and total nitrogen concentration. There is a significant increasing trend in pH. A significant decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform excursions.

McAlpine Creek **-** There are two SCDHEC monitoring sites along McAlpine Creek. At the upstream site ***(CW-226)***, aquatic life uses are fully supported and decreasing trends in turbidity and total nitrogen concentration suggests improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform excursions; however, a significant decreasing trend in fecal coliform bacteria suggests improving conditions for this parameter. At the downstream site ***(CW-064)***, aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and total nitrogen concentration. Significant decreasing trends in turbidity and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are partially supported at this site; however, a significant decreasing trend in fecal coliform bacteria suggests improving conditions for this parameter.

Steele Creek - There are four SCDHEC monitoring sites along Steele Creek. At the furthest upstream site ***(CW-009)***, aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand, turbidity, and total phosphorus. There is a significant decreasing trend in pH. Recreational uses are not supported at this site due to fecal coliform excursions. At the next site moving downstream ***(CW-203)***, aquatic life uses are fully supported and recreational uses are not supported due to fecal coliform excursions. Further downstream ***(CW-681)***, aquatic life uses are partially supported based on pH excursions. At the furthest downstream site ***(CW-011)***, aquatic life and recreational uses are fully supported; however, there is a significant increasing trend in five-day biochemical oxygen demand and a decreasing trend in dissolved oxygen concentration.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)***	***NPDES#*** ***TYPE*** ***COMMENT***
SUGAR CREEK UTILITIES OF SC/FOXWOOD SD	SC0027146 MINOR DOMESTIC
SUGAR CREEK TRIBUTARY WIKOFF COLOR CORP.	SCG250094 MINOR INDUSTRIAL
STEELE CREEK TRIBUTARY PRESSLEY RECYCLING CENTER/PRESSLEY MINE	SCG730498 MINOR INDUSTRIAL
MCALPINE CREEK CWS/LAMPLIGHTER VILLAGE SD	SC0030112 MINOR DOMESTIC
STEELE CREEK TRIBUTARY COLTHARP INC./CBM LANDFILL MINE	SCG730566 MINOR INDUSTRIAL

JACKSON BRANCH	SCG731114
JENNINGS ENTERPRIZES/JENNINGS ENTERPRIZES MINE	MINOR INDUSTRIAL
JACKSON BRANCH TRIBUTARY	SC0038113
UTILITIES OF SC/CAROWOOD SD.	MINOR DOMESTIC

Municipal Separate Storm Sewer Systems (MS4)

RECEIVING STREAM	***NPDES#***
MUNICIPALITY	***MS4 PHASE***
RESPONSIBLE PARTY	***MS4 SIZE***
IMPLEMENTING PARTY	
SUGAR CREEK	SCR039101
FORT MILL	PHASE II
FORT MILL	SMALL MS4
FORT MILL	
SUGAR CREEK	SCR039104
UNINCORPORATED AREAS	PHASE II
YORK COUNTY	SMALL MS4
YORK COUNTY	

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME	***PERMIT #***
FACILITY TYPE	***STATUS***
COOKS C&D LANDFILL	----------
INDUSTRIAL	INACTIVE
COOKS LANDFILL	291004-1301
C&D	INACTIVE
CONTAINER CORP. OF CAROLINA/TRANSFER STA.	463323-6001
INDUSTRIAL	ACTIVE
JOHN HOWARD INERT LANDFILL	----------
INDUSTRIAL	INACTIVE
SAM FISCHER LANDFILL	----------
INDUSTRIAL	INACTIVE
CUTSHAW C/C LANDFILL	462425-1201
CONSTRUCTION	INACTIVE
CUTSHAW C&D LANDFILL	----------
C&D	INACTIVE
COLTHARP LANDFILL	462602-1201
CONSTRUCTION	ACTIVE
PRESSLEY WOOD CHIPPING FACILITY	462655-3001
WOOD CHIPPING	ACTIVE

PRESSLEY WOOD INCINERATOR	292655-4001
INCINERATOR	INACTIVE
CITY OF FT. MILL COMPOSTING SITE	461003-3001
COMPOSTING	ACTIVE
GUPTON COMPOSTING FACILITY	292625-3001
COMPOSTING	ACTIVE

Land Application Sites

LAND APPLICATION SYSTEM FACILITY NAME	***ND# TYPE***
SPRAYFIELD	ND0067105
LAZY DAZE CAMPGROUND	DOMESTIC

Mining Activities

MINING COMPANY MINE NAME	***PERMIT # MINERAL***
CBM LANDFILL COMPANY	1094-91
CBM LANDFILL MINE	SAND/CLAY
PRESSLEY MINING CO.	0808-57
PRESSLEY MINE	CLAY
RESERVE DOMICILES LTD TRUSTEES	1392-91
COLTHARP ROAD MINE	SAND

Growth Potential

This watershed has high growth potential and contains a portion of the Town of Fort Mill and rapidly growing residential areas near I-77 and U.S. Hwy 21in the Fort Mill Township and the northern tip of Lancaster County's Indian Land. Major developments include the Paramount Carowinds amusement park and surrounding industrial and commercial uses along Carowinds Blvd. and the S.C. Hwy 160/U.S. Hwy 521 interchange. The Charlotte Knights baseball stadium and its surrounding property are slated for redevelopment when the team moves to a new stadium in Charlotte, N.C. in 2014. Industrial and commercial growth is expected to continue along Carowind Blvd and the S.C. Hwy 160 corridor leading to U.S. Hwy 521 in Lancaster County. Water service is present in all sections of the watershed, except for some areas east of Fort Mill. Sewer service is present in Fort Mill and its surrounding area, along the Carowinds Blvd and the S.C. Hwy 160 corridor. The presence of Charlotte, N.C. just across the State line and the easy access into that city via I-77and U.S. Hwy 521 ensure that strong growth will continue into the near future. Transportation factors, which will have an impact on the area, include the proposed Fort Mill bypass for S.C. Hwy 160.

Watershed Restoration and Protection

Total Maximum Daily Loads (TMDLs)

Three TMDLs were developed by SCDHEC using the load duration methodology and approved by the EPA for ***Steele Creek*** in Mecklenburg County, NC and York County, SC (monitoring sites CW-009, CW-203, and CW-011). These TMDLs determine the maximum amount of fecal coliform bacteria that Steele Creek at each site can receive from pollution sources and still meet water quality standards. At the time the TMDL was approved there were two permitted continuous dischargers of fecal coliform in the South Carolina portion of the watershed. There was also one continuous discharger that was permitted to apply wastewater to land. At that time there were several non-continuous dischargers (MS4s) in the watershed with potential to discharge fecal coliform. Potential sources of fecal coliform pollution in the watershed contributing to the impairment of Steele Creek include various urban nonpoint sources. The TMDLs require reductions of 87% (CW-009), 83% (CW-203), and 75% (CW-011) in the current load to the creek to meet standards. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

Special Projects

NPS Assessment and TMDL Development for Nutrients in the Catawba River Basin

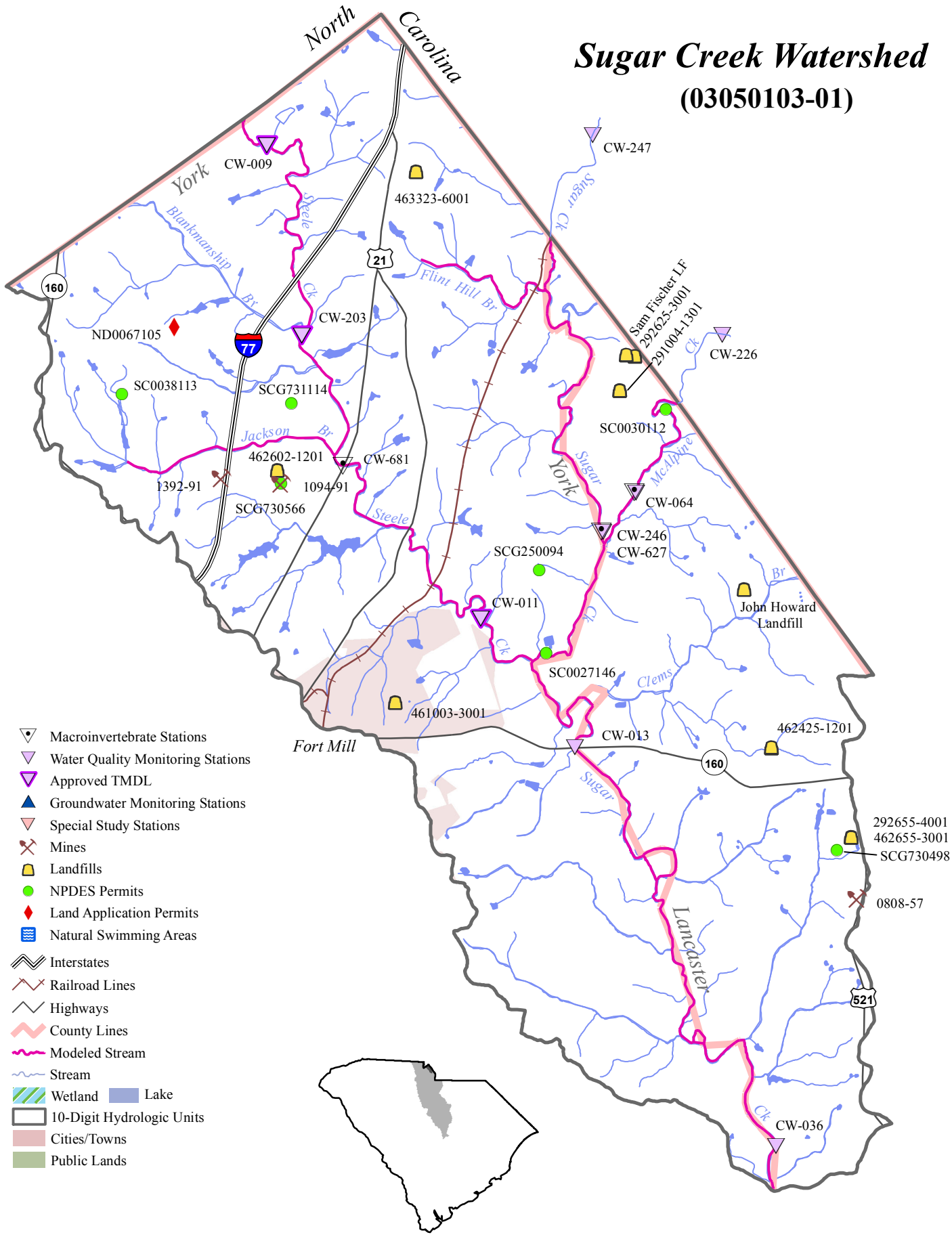
SCDHEC continues to address nutrient loading concerns in the impaired reservoirs (Fishing Creek, Great Falls, and Cedar Creek Reservoirs and Lake Wateree) of the lower Catawba-Wateree Basin using the WARMF (Watershed Analysis Risk Management Framework) water quality model. This watershed model was updated previously through 2005, but changes in phosphorus loading, land use, and population made the model out dated in terms of the model time period. Significant changes in the watershed since 2005 include new phosphorus limits on the three Charlotte-Mecklenburg WWTPs in the Sugar Creek watershed, closing of two major industrial dischargers in the South Carolina portion of the basin, and a significant increase in population and developed land use in the Charlotte – Rock Hill area. In late 2012 SCDHEC began an update of the model that will incorporate these changes in the watershed and make the model as current as feasible. SCDHEC intends to use the updated model for nutrients and pH TMDLs by determining new Wasteload Allocations for point source dischargers and Municipal Separate Storm Sewer Systems (MS4s) and Load Allocations for the nonpoint sources within the Basin.

Catawba River Water Supply Project Expansion

The Catawba River Water Supply Project (CRWSP) is a joint venture between Lancaster County in South Carolina and Union County in North Carolina, which provides drinking water to the majority of both counties. To better manage water supplies during drought conditions, the CRWSP plans to expand its off-river reservoir to provide additional storage and less reliance on Catawba River flows.

McAlpine Creek Project

The Charlotte-Mecklenburg McAlpine Creek Wastewater Treatment Plant recently completed a pilot study using nutrient recovery technology that turns waste into a natural fertilizer. Results of the pilot study are being reviewed to see if this project is feasible on a large scale. McAlpine Creek flows into South Carolina and has seen a nearly 70% reduction in phosphorous, since 2007, due to regulations imposed by DHEC. The nutrient recycling project could further reduce nutrients in South Carolina's waters.


Sugar Creek Watershed
(03050103-01)
North Carolina
York
CW-009
463323-6001
CW-247
Sugar Ck
Steele
Blankmanship Br
Ck
CW-203
Flint Hill Br
Sam Fischer LF
292625-3001
291004-1301
CW-226
ND0067105
SC0038113
SCG731114
SC0030112
Jackson Br
462602-1201
CW-681
1392-91
1094-91
SCG730566
Steele
Sugar
York
McAlpine
CW-064
CW-246
CW-627
SCG250094
CW-011
John Howard
Landfill
Br
Ck
SC0027146
Clems
461003-3001
Fort Mill
CW-013
462425-1201
Sugar
292655-4001
462655-3001
SCG730498
0808-57
Lancaster
CW-036
Macroinvertebrate Stations
Water Quality Monitoring Stations
Approved TMDL
Groundwater Monitoring Stations
Special Study Stations
Mines
Landfills
NPDES Permits
Land Application Permits
Natural Swimming Areas
Interstates
Railroad Lines
Highways
County Lines
Modeled Stream
Stream
Wetland
Lake
10-Digit Hydrologic Units
Cities/Towns
Public Lands
0
0.5
1
2
3
Miles
55
D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

03050103-02

(Twelvemile Creek)

General Description

The South Carolina portion of watershed 03050103-02 (formerly a portion of 03050103-030) is located in Lancaster County and consists primarily of ***Twelvemile Creek*** and its tributaries. The watershed occupies 19, 177 acres of the Piedmont region of South Carolina. Land use/land cover in the watershed includes: 68.2% forested land, 18.5% agricultural land, 9.6% urban land, 1.7% forested wetland (swamp), 1.5% barren land, and 0.5% water.

Twelvemile Creek originates in North Carolina and drains into the Catawba River. Along the way, Twelvemile Creek accepts drainage from Sixmile Creek (Cow Branch, Tarkill Branch, Long Branch), Rone Branch, Millstone Branch, and Todd Branch. There are a total of 401.4 stream miles in the entire Twelvemile Creek watershed (92.2 miles within South Carolina) and 732.9 acres of lake waters (151.3 acres within South Carolina), all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CW-176	P/W	FW	SIXMILE CREEK AT S-29-54
CW-083	S/INT	FW	TWELVEMILE CREEK AT S-29-55 0.3 MI NW OF VAN WYCK
(CW-041)	S/INT	FW	CATAWBA RIVER AT SC 5 AT BOWATER

Sixmile Creek (CW-176) – Aquatic life and recreational uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration and a significant increasing trend in five-day biochemical oxygen demand. Significant decreasing trends in total phosphorus concentration, total nitrogen concentration, and fecal coliform bacteria suggest improving conditions for these parameters.

Twelvemile Creek (CW-083) – Aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration and a significant increasing trend in five-day biochemical oxygen demand and total phosphorus concentration. Recreational uses are not supported due to fecal coliform excursions; however, a significant decreasing trend in fecal coliform bacteria suggests improving conditions for this parameter.

Catawba River (CW-041) – This site is actually located in 03050103-06, but is situated where Twelvemile Creek enters the river. Aquatic life and recreational uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand, total nitrogen concentration, total suspended solids, and fecal coliform bacteria concentration.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME*	*NPDES#* *TYPE*
TARKILL BRANCH TRIBUTARY BORAL BRICKS/MILLER MINE	SCG730641 MINOR INDUSTRIAL

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
FRANK LANDFILL C&D	292900-1301 INACTIVE
HOOD SHORT TERM C&D LANDFILL C&D	292902-1301 INACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
ASHE DIV., BORAL BRICKS, INC. MILLER PIT	0003-57 SHALE

Growth Potential

This area has high growth potential as it is nearby to rapidly growing sections of the Charlotte, N.C. urban area and has good access via the four-lane U.S. 521into that city. Public sewer has now become available along U.S. Hwy 521 and surrounding areas to compliment existing public water. The result of this new infrastructure has been an explosion of residential and commercial growth. The Del Webb Carolina Lakes project is a good example of this growth, which has fueled the approval of thousands of new residential lots in a variety of planned communities and subdivisions. This area of Lancaster County is currently experiencing rapid residential growth. This trend is expected to continue for the foreseeable future. Commercial growth is also occurring along the U.S. Hwy 521 corridor.

Watershed Restoration and Protection

Total Maximum Daily Loads (TMDLs)

A TMDL was developed for SCDHEC using the load duration curve methodology and approved by the EPA for ***Sixmile Creek*** in Union and Mecklenburg Counties, NC and Lancaster County, SC (monitoring site CW-176). The TMDL determines the maximum amount of fecal coliform bacteria that Sixmile Creek at CW-176 can receive from all pollution sources and still meet water quality standards. At the time the TMDL was approved there were no permitted continuous dischargers of fecal coliform in the watershed. However portion of the watershed is within the City

of Charlotte, N.C., a Phase I MS4 (a non-continuous discharger). Potential sources of fecal coliform pollution in the watershed contributing to the impairment of Sixmile Creek include runoff from the MS4, leaking sanitary sewers, wildlife, cattle watering in creeks, and failing onsite wastewater disposal (OSWDs) or septic systems. The TMDL requires a reduction of 92% in the current nonpoint source load to the creek to meet standards.

A TMDL was developed for SCDHEC using the load duration curve methodology and approved by the EPA for ***Twelvemile Creek*** in Union and Mecklenburg Counties, NC and Lancaster County, SC (monitoring site CW-083). The TMDL determines the maximum amount of fecal coliform bacteria that Twelvemile Creek at CW-083 can receive from all pollution sources and still meet water quality standards. At the time the TMDL was approved there was one permitted continuous discharger of fecal coliform in the North Carolina portion of the watershed. At that time a small portion of the watershed within North Carolina was within a MS4 designated area. Potential sources of fecal coliform pollution in the watershed contributing to the impairment of Twelvemile Creek include runoff from MS4 areas, leaking sanitary sewers, sanitary sewer overflows (SSOs0, cattle watering in creeks, land application of manure, and failing onsite wastewater disposal (OSWDs). The TMDL requires a reduction of 98% in the current nonpoint source load to the creek to meet standards. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

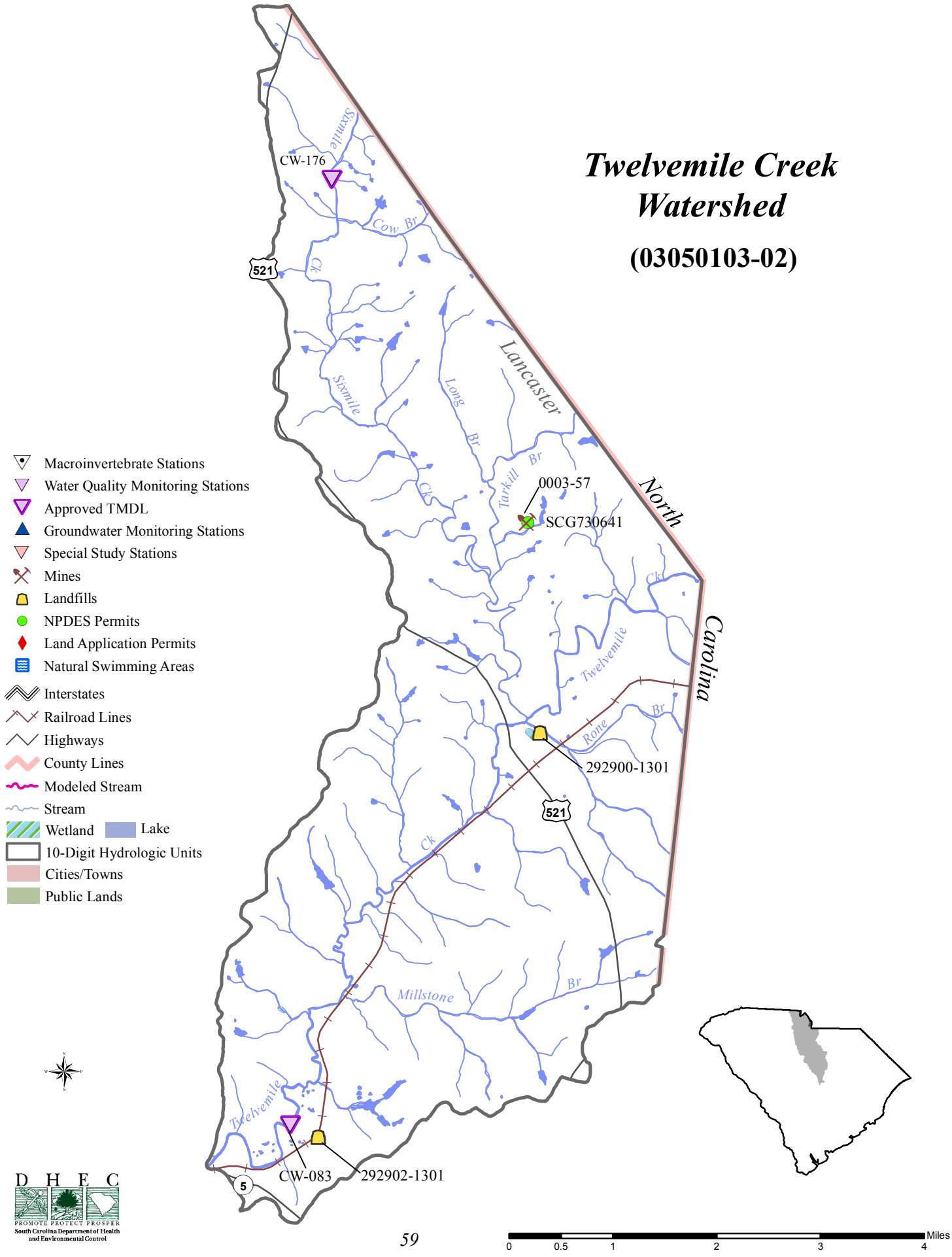
Special Projects

NPS Assessment and TMDL Development for Nutrients in the Catawba River Basin

SCDHEC continues to address nutrient loading concerns in the impaired reservoirs (Fishing Creek, Great Falls, and Cedar Creek Reservoirs and Lake Wateree) of the lower Catawba-Wateree Basin using the WARMF (Watershed Analysis Risk Management Framework) water quality model. This watershed model was updated previously through 2005, but changes in phosphorus loading, land use, and population made the model out dated in terms of the model time period. Significant changes in the watershed since 2005 include new phosphorus limits on the three Charlotte-Mecklenburg WWTPs in the Sugar Creek watershed, closing of two major industrial dischargers in the South Carolina portion of the basin, and a significant increase in population and developed land use in the Charlotte – Rock Hill area. In late 2012, SCDHEC began an update of the model that will incorporate these changes in the watershed and make the model as current as feasible. SCDHEC intends to use the updated model for nutrients and pH TMDLs by determining new Wasteload Allocations for point source dischargers and Municipal Separate Storm Sewer Systems (MS4s) and Load Allocations for the nonpoint sources within the Basin.

Catawba River Water Supply Project Expansion

The Catawba River Water Supply Project (CRWSP) is a joint venture between Lancaster County in South Carolina and Union County in North Carolina, which provides drinking water to the majority of both counties. To better manage water supplies during drought conditions, the CRWSP plans to expand its off-river reservoir to provide additional storage and less reliance on Catawba River flows.


Twelvemile Creek Watershed
(03050103-02)
CW-176
Sixmile
Cow Br
Ck
521
Lancaster
Sixmile
Long Br
Cks
Tarkill Br
0003-57
SCG730641
North
Carolina
Ck
Twelvemile
Rone Br
292900-1301
521
Ck
Millstone
Br
Twelvemile
CW-083
292902-1301
5
Macroinvertebrate Stations
Water Quality Monitoring Stations
Approved TMDL
Groundwater Monitoring Stations
Special Study Stations
Mines
Landfills
NPDES Permits
Land Application Permits
Natural Swimming Areas
Interstates
Railroad Lines
Highways
County Lines
Modeled Stream
Stream
Wetland
Lake
10-Digit Hydrologic Units
Cities/Towns
Public Lands
D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control
0
0.5
1
2
3
4
Miles

03050103-03

(Cane Creek)

General Description

The South Carolina portion of watershed 03050103-03 (formerly 03050103-040) is located in Lancaster County and consists primarily of ***Cane Creek*** and its tributaries. The watershed occupies 90,175 acres of the Piedmont region of South Carolina. Land use/land cover in the watershed includes: 58.3% forested land, 24.1% agricultural land, 15.9% urban land, 0.8% water, 0.8% forested wetland (swamp), and 0.1% barren land.

Cane Creek originates in North Carolina and accepts drainage from Simpson Branch, Unity Branch, Flag Pond Branch, McAteer Branch, Sandy Branch, Cedar Pines Lake, and Camp Creek (North Prong, South Prong). Further downstream, the Bear Creek drainage enters Cane Creek. Bear Creek accepts drainage from Caney Branch and Dry Branch before flowing through the Lancaster Reservoir. Turkey Quarter Creek (Little Turkey Creek) flows into Bear Creek at the reservoir, and further downstream, Gills Creek (Hannahs Creek) enters near the Town of Lancaster. Rum Creek drains into Cane Creek near the Town of Fort Lawn. There are a total of 505.4 stream miles in the entire Cane Creek watershed (442.9 miles within South Carolina) and 1,177.0 acres of lake waters (835.3 acres within South Carolina), all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CW-185	S/W	FW	CANE CREEK AT SC 200 5 MI NNE OF LANCASTER
RS-07043	RS07	FW	GILLS CREEK AT S-29-36 4.5MI ENE OF LANCASTER
RS-05403	RS05	FW	HANNAHS CREEK AT AT S-29-376 3.4MI E OF LANCASTER
CW-047	S/W	FW	GILLS CREEK AT US 521 NNW OF LANCASTER
CW-151	S/W	FW	BEAR CREEK AT S-29-362 3.5 MI SE OF LANCASTER
CW-131	S/W	FW	BEAR CREEK AT S-29-292 1.6 MI W OF LANCASTER
CW-210	BIO	FW	CANE CREEK AT SC 9 BYPASS
CW-017	S/INT	FW	CANE CREEK AT S-29-50
CW-232	W	FW	RUM CREEK AT S-29-187

Cane Creek - There are three SCDHEC monitoring sites along Cane Creek. At the upstream site ***(CW-185)***, aquatic life use is partially supported due to dissolved oxygen excursions, which are compounded by a significant decreasing trend in dissolved oxygen concentration. There were also significant increasing trends in five-day biochemical oxygen demand and total phosphorus concentration. Recreational uses are partially supported at this site due to fecal coliform excursions. At the midstream site ***(CW-210)***, aquatic life uses are partially supported based on pH excursions. At the downstream site ***(CW-017)***, aquatic life uses are not supported due to dissolved oxygen and copper excursions. In addition, there is a significant increasing trend in five-day biochemical oxygen demand. There is a significant decreasing trend in pH. Recreational uses are partially supported at this site due to fecal coliform excursions; however, a significant decreasing trend in

fecal coliform suggests improving conditions for this parameter.

Hannahs Creek (RS-05403) – Aquatic life uses are not supported due to dissolved oxygen excursions and recreational uses are not supported due to fecal coliform excursions.

Gills Creek - There are two SCDHEC monitoring sites along Gills Creek. At the upstream site ***(RS-07043)***, aquatic life uses are not supported due to dissolved oxygen excursions and recreational uses are not supported due to fecal coliform excursions. At the downstream site ***(CW-047)***, aquatic life uses are fully supported; however, there are significant increasing treads in five-day biochemical oxygen demand and total phosphorus concentration. Recreational uses are not supported due to fecal coliform excursions.

Bear Creek – There are two SCDHEC monitoring sites along Bear Creek. At the upstream site ***(CW-151)***, aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen and significant increasing trends in five-day biochemical oxygen demand and total phosphorus concentration. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform suggests improving conditions for this parameter. At the downstream site ***(CW-131)***, aquatic life uses are fully supported. Recreational uses are not supported due to fecal coliform excursions; however, a significant decreasing trend in fecal coliform suggests improving conditions for this parameter.

Rum Creek (CW-232) - Aquatic life uses are not supported due to dissolved oxygen excursions and recreational uses are fully supported.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***COMMENT***
CAMP CREEK TRIBUTARY	SCG750033
C&S CAR WASH	MINOR INDUSTRIAL

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME	***PERMIT #***
FACILITY TYPE	***STATUS***
FRANKS TIRE PROCESSING	292414-5201
WASTE TIRE PROCESSING	INACTIVE

SNIPES SHORT-TERM C&D LANDFILL C&D	292648-1301 INACTIVE
SPRINGS INDUSTRIES C&D	292657-1901 ACTIVE
SPRINGS INDUSTRIES C&D & LT	293314-1201 INACTIVE
SPRINGS INDUSTRIES (5) INDUSTRIAL	---------- INACTIVE
PARNELL INERT LANDFILL INDUSTRIAL	---------- INACTIVE
PIEDMONT COMPOSTING COMPOSTING	292642-3001 ACTIVE
BOWERS FIBERS LAND APPLICATION	292684-8001 ACTIVE

Growth Potential

This watershed has moderate potential for growth as the City of Lancaster is located here and has densely developed areas of residential, commercial, and industrial land uses. The City continues to expand its wastewater treatment plant to meet future growth demands. This will allow for increased industrial and municipal flows. A large area of residential development extends to the south of the city, and also along S.C. Hwy 9 and S.C. Hwy 903 to the east, and U.S. Hwy 521 and S.C. Hwy 200 to the north. Significant industrial and commercial growth has occurred on the north side of the city along the S.C. Hwy 9 Bypass. Rail service is available between Lancaster and the cities of Rock Hill and Chester. Water service is available along major roads throughout the watershed. Sewer service is available in the City of Lancaster in the residential areas to its south, and along S.C. Hwy 903 east of the city. Lancaster County continues to develop Catawba Ridge, a large mixed-use community along Fishing Creek Reservoir. The development would extend from S.C. Hwy 9 down to S.C. Hwy 200, within the County. The overall project could result in a densely populated residential area, which would include commercial and industrial uses. To date, some residential developer has purchased acreage in the development with some limited housing construction underway.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

A TMDL was developed by SCDHEC and approved by EPA for several water quality monitoring sites in the ***Cane Creek*** watershed including CW-151 and CW-131 along Bear Creek, CW-047 on Gills Creek, and CW-185 and CW-017 along Cane Creek to determine the maximum amount of fecal coliform bacteria they can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the sites were determined to be runoff from agricultural areas. The TMDL states that a 7% reduction in fecal coliform loading from these urban and agricultural sources

at monitoring site CW-151, a 69% reduction at CW-131, a 63% reduction at CW-047, a 39% reduction at CW-185, and a 74% reduction at CW-017 are necessary for the streams to meet the recreational standard. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

Special Projects

NPS Assessment and TMDL Development for Nutrients in the Catawba River Basin

SCDHEC continues to address nutrient loading concerns in the impaired reservoirs (Fishing Creek, Great Falls, and Cedar Creek Reservoirs and Lake Wateree) of the lower Catawba-Wateree Basin using the WARMF (Watershed Analysis Risk Management Framework) water quality model. This watershed model was updated previously through 2005, but changes in phosphorus loading, land use, and population made the model out dated in terms of the model time period. Significant changes in the watershed since 2005 include new phosphorus limits on the three Charlotte-Mecklenburg WWTPs in the Sugar Creek watershed, closing of two major industrial dischargers in the South Carolina portion of the basin, and a significant increase in population and developed land use in the Charlotte – Rock Hill area. In late 2012, SCDHEC began an update of the model that will incorporate these changes in the watershed and make the model as current as feasible. SCDHEC intends to use the updated model for nutrients and pH TMDLs by determining new Wasteload Allocations for point source dischargers and Municipal Separate Storm Sewer Systems (MS4s) and Load Allocations for the nonpoint sources within the Basin.

Catawba River Water Supply Project Expansion

The Catawba River Water Supply Project (CRWSP) is a joint venture between Lancaster County in South Carolina and Union County in North Carolina, which provides drinking water to the majority of both counties. To better manage water supplies during drought conditions, the CRWSP plans to expand its off-river reservoir to provide additional storage and less reliance on Catawba River flows.

Great Falls Heritage Tract

The Katawba Valley Land Trust has purchased and preserved 2,000 acres on the Catawba River at Great Falls along Great Falls Reservoir and Cedar Creek Reservoir. The Crescent-Heritage Tract combines significant natural resources with cultural and historical value close to a large urban area that is Charlotte/Rock Hill. http://sccbank.sc.gov/properties/crescent.html.

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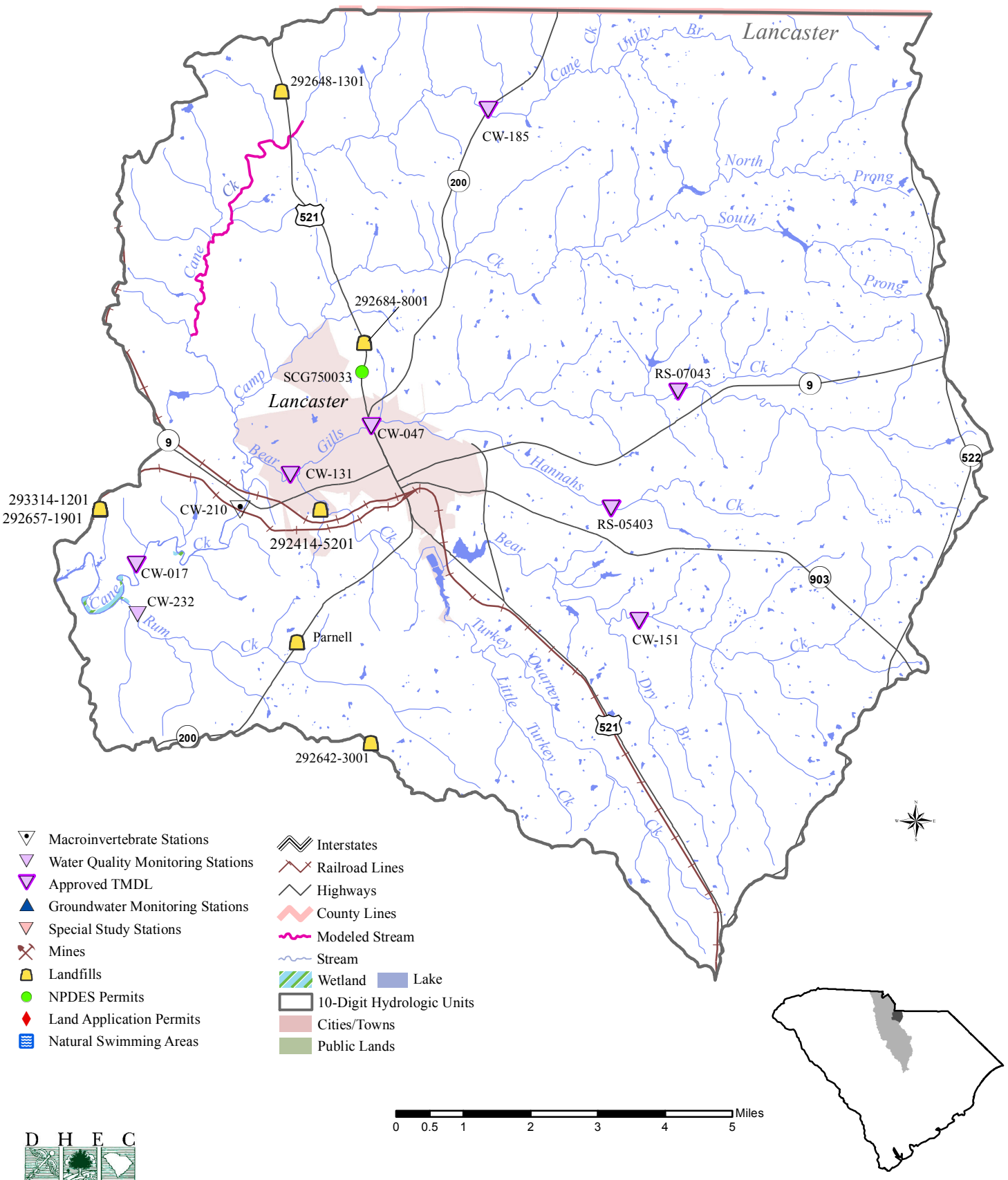
Cane Creek Watershed

(03050103-03)



DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

03050103-04

(Fishing Creek)

General Description

Watershed 03050103-04 (formerly 03050103-050, 060, 070) is located in York and Chester Counties and consists primarily of ***Fishing Creek*** and its tributaries. The watershed occupies 185,010 acres of the Piedmont region of South Carolina. Land use/land cover in the watershed includes: 55.0% forested land, 30.8% agricultural land, 13.0% urban land, 0.7% forested wetland (swamp), and 0.5% water.

Fishing Creek originates near the City of York and accepts drainage from Hope Branch, Langham Branch, and Wildcat Creek (Tools Fork, Dye Creek), which originates near the City of Rock Hill. Taylor Creek enters Fishing Creek downstream of Wildcat Creek, followed by Stoney Fork, Browns Branch, and Clinton Branch. Further downstream, South Fork Fishing Creek (Love Creek, Conrad Creek) merges with Fishing Creek followed by Hicklin Branch (McFadden Branch), Tinkers Creek (Rum Branch, Neelys Creek), Reeves Creek, and Dairy Branch near the Town of Fort Lawn. Lake Oliphant is located on a tributary to Conrad Creek. Fishing Creek empties into and forms the headwaters of Great Falls Reservoir. There are a total of 1,218.3 stream miles and 1,081.1 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CW-029	P/W	FW	FISHING CREEK AT SC 49 NE OF YORK
RS-07208	RS07/BIO	FW	LANGHAM BR AT BENFIELD RD, 4.2MI SE OF YORK
CW-005	P/W/BIO	FW	FISHING CREEK AT S-46-347 DOWNSTREAM OF YORK WWTP
CW-225	S/INT	FW	FISHING CREEK AT S-46-503
CW-212	S/W	FW	TOOLS FORK AT S-46-195 7 MI NW OF ROCK HILL
CW-006	S/W	FW	WILDCAT CREEK AT S-46-650
CW-096	S/W	FW	WILDCAT CREEK AT S-46-998 9 MI ENE OF MCCONNELLS
CW-224	S/W	FW	FISHING CREEK AT S-46-163
CW-695	BIO	FW	TAYLOR CREEK AT S-46-735
CW-654	BIO	FW	FISHING CREEK AT S-46-655
CL-021	W	FW	LAKE OLIPHANT, FOREBAY EQUIDISTANT FROM DAM & SHORE
CW-007	BIO	FW	SOUTH FORK FISHING CREEK AT S-12-50
CW-008	P/W	FW	FISHING CREEK AT SC 223 NE OF RICHBURG
CW-227	S/W	FW	NEELYS CREEK AT S-46-997
CW-234	W/INT/BIO	FW	TINKERS CREEK AT S-12-599
CW-233	W/INT	FW	FISHING CREEK AT S-12-77

Fishing Creek **-** There are seven SCDHEC monitoring sites along Fishing Creek. At the furthest upstream site ***(CW-029)***, aquatic life uses are fully supported; however, there are significant decreasing trends in dissolved oxygen concentration and increasing trends in five-day biochemical oxygen demand. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. At the next site downstream ***(CW-005)***, aquatic life uses are partially supported based on macroinvertebrate community data. In addition, there are significant decreasing trends in

dissolved oxygen concentration and significant increasing trends in total nitrogen concentration. There is a significant increasing trend in pH. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. Further downstream ***(CW-225)***, aquatic life uses are fully supported; however, there is a significant increasing trend in five-day biochemical oxygen demand. There is a significant increasing trend in pH. Recreational uses are not supported at this site due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria suggests improving conditions for this parameter.

At the next site downstream ***(CW-224)***, aquatic life uses are fully supported; however, there is a significant increasing trend in five-day biochemical oxygen demand. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. Aquatic life uses are partially supported at ***CW-654*** based on macroinvertebrate community data. Further downstream ***(CW-008)***, aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and total nitrogen concentration. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria suggests improving conditions for this parameter. At the furthest downstream site ***(CW-233)***, aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand. There is a significant increasing trend in pH. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Langham Branch (RS-07208) – Although macroinvertebrate communities appeared to be impacted at this site, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year. Recreational uses are not supported due to fecal coliform bacteria excursions.

Tools Fork (CW-212) – Aquatic life uses are not supported due to turbidity excursions. There is a significant increasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

Wildcat Creek - There are two SCDHEC monitoring sites along Wildcat Creek. At the upstream site ***(CW-006)***, aquatic life uses are not supported due to dissolved oxygen excursions, which are compounded by a significant decreasing trend in dissolved oxygen concentration. In addition, there are significant increasing trends in five-day biochemical oxygen demand and total phosphorus concentration. Recreational uses are fully supported at this site. At the downstream site ***(CW-096)***, aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and decreasing trends in dissolved oxygen concentration. There is a significant increasing trend in pH. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Taylor Creek (CW-695) – Aquatic life uses are partially supported based on macroinvertebrate community data.

Lake Oliphant (CL-021) – Aquatic life uses are not supported due to total phosphorus and pH excursions. Recreational uses are fully supported.

South Fork Fishing Creek (CW-007) – Aquatic life uses are partially supported based on macroinvertebrate community data.

Neelys Creek (CW-227) – Aquatic life uses are fully supported, but recreational uses are not supported due to fecal coliform bacteria excursions.

Tinkers Creek (CW-234) – Although macroinvertebrate communities appeared to be impacted at this site, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year. In addition, there is a significant increasing trend in total phosphorus concentration. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-074	GB	PIEDMONT BEDROCK	GUTHRIES

NPDES Permitted Activities

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME*	*NPDES#* *TYPE*
FISHING CREEK CITY OF YORK/FISHING CREEK WWTP	SC0038156 MAJOR DOMESTIC
FISHING CREEK TRIBUTARY SUBURBAN PROPANE - TIRZAH	SC0046248 MINOR INDUSTRIAL
HOPE BRANCH MCAFEE MHP	SC0027111 MINOR DOMESTIC
FISHING CREEK CITY OF CHESTER/LANDO-MANETTA PLANT	SC0001741 MINOR DOMESTIC
TOOLS FORK UTILITIES OF SC/COUNTRY OAKS SD	SC0039217 MINOR DOMESTIC
TOOLS FORK TRIBUTARY ADNAH HILLS MHP	SC0041670 MINOR DOMESTIC
TAYLOR CREEK MARTIN MARIETTA/ROCK HILL QUARRY	SCG730061 MNOR INDUSTRIAL

CLINTON BRANCH PINETUCK UTILITIES/ PINETUCK SD	SC0041203 MINOR DOMESTIC
CLINTON BRANCH KENTUCKY-CUMBERLAND COAL CO.	SC0042129 MINOR INDUSTRIAL
NEELYS CREEK NEELYS CREEK HOMES, INC.	SC0041904 MINOR DOMESTIC
NEELYS CREEK TRIBUTARY JACK NELSON ENTERPRISES	SC0027341 MINOR DOMESTIC
FISHING CREEK CAROLAWN INC./NPL SITE	SC0047538 MINOR INDUSTRIAL
FISHING CREEK TRIBUTARY CIRCLE S RANCH FEEDMILL	SCG250172 MINOR INDUSTRIAL
FISHING CREEK RAMBO ASSOCIATES/RAMBO MINE	SCG730477 MNOR INDUSTRIAL
FISHING CREEK ROGERS CELLULOSIC LF/ROGERS SAND MINE	SCG730497 MNOR INDUSTRIAL
FISHING CREEK TRIBUTARY ALBERT D. OLIPHANT INTERPROP/ 49/5 MINE	SCG730592 MNOR INDUSTRIAL
FISHING CREEK MARION KING/FISHING CREEK #125	SCG730652 MNOR INDUSTRIAL
TOOLS FORK TRIBUTARY DWIGHT WOOD/ADNAH CHURCH ROAD MINE	SCG730633 MNOR INDUSTRIAL
TOOLS FORK EAGLE CONSTRUCTION CO., INC./JIM WHITE MINE	SCG730998 MNOR INDUSTRIAL
NEELYS CREEK TRIBUTARY CREEKSIDE OF YORK CO., INC./CREEKSIDE OF YORK MINE	SCG730994 MNOR INDUSTRIAL
TAYLOR CREEK EAGLE CONSTRUCTION/HERITAGE MINE	SCG731214 MNOR INDUSTRIAL

Municipal Separate Storm Sewer Systems (MS4)

RECEIVING STREAM ***MUNICIPALITY*** ***RESPONSIBLE PARTY*** ***IMPLEMENTING PARTY***	***NPDES#*** ***MS4 PHASE*** ***MS4 SIZE***
FISHING CREEK ROCK HILL ROCK HILL ROCK HILL	SCR039102 PHASE II SMALL MS4

Nonpoint Source Permitted Activities

Land Disposal Activities

Landfill Facilities

LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
YORK COUNTY LANDFILL MUNICIPAL	461001-1101 INACTIVE
YORK COUNTY LANDFILL C & D	461001-1201 ACTIVE
YORK COUNTY SOLID WASTE TRANSFER STATION MUNICIPAL TRANSFER STATION	461001-6001 ACTIVE
YORK COUNTY SANITARY LANDFILL MUNICIPAL	---------- INACTIVE
YORK COUNTY SANITARY #1 LANDFILL MUNICIPAL	---------- INACTIVE
YORK COUNTY SUBTITLE D MUNC. SW LF MUNICIPAL	461001-1102 INACTIVE
YORK COUNTY TIRE PROCESSING FACILITY WTP	461001-5201 INACTIVE
YORK COUNTY WOOD CHIPPING FACILITY COMPOSTING	461001-3001 ACTIVE
ROGERS C&D LANDFILL C&D	462427-1201 ACTIVE
ROGERS COMPOSTING FACILITY COMPOSTING	462636-3001 ACTIVE
CITY OF ROCK HILL LCD&YT LF C&D	461002-1702 ACTIVE
CITY OF ROCK HILL IWP	461002-1201 INACTIVE
CITY OF ROCK HILL COMPOSTING	461002-3001 INACTIVE
CITY OF ROCK HILL C&D	461002-1201 INACTIVE
CITY OF ROCK HILL COMPOSTING FACILITY COMPOSTING	461002-3002 ACTIVE
CITY OF ROCK HILL IWP	---------- INACTIVE

CITY OF ROCK HILL INERT SW DIV. ----------	---------- INACTIVE
CITY OF ROCK HILL C&D	461002-1202 INACTIVE
CITY OF ROCK HILL COMPOSTING	461006-3001 INACTIVE
COUNTRY SQUIRE LANDFILL C&D	462452-1301 INACTIVE
COUNTRY SQUIRE LCD&YT LANDFILL C&D	462452-1701 INACTIVE
POPE CONSTRUCTION CO. C/C LANDFILL CONSTRUCTION	462424-1601 INACTIVE
POPE CONSTRUCTION CO. CONSTRUCTION	462424-1201 INACTIVE
POPE CONSTRUCTION CO. IWP	---------- INACTIVE
CLAWSON LCD&YT LANDFILL C&D	462620-1701 ACTIVE
VERNSDALE ROAD C&D LANDFILL C&D	462774-1201 ACTIVE
SECOND CHANCE MULCH CENTER COMPOSTING	462751-3001 ACTIVE
ARTHUR SHORT TERM C&D C & D	122901-1301 INACTIVE
ATLANTIC OIL COLLECTION SERVICES INC. USED OIL - UOM	462724-7301 ACTIVE

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
ALBERT D. OLIPHANT INTERPROP 49/5 MINE	1096-91 SAND/CLAY
JULE ROGERS ROGERS SAND MINE	1265-91 SAND
REA CONSTRUCTION CO. FISHING CREEK MINE	0178-23 SAND
MARTIN MARIETTA AGGREGATES ROCK HILL QUARRY	0104-91 GRANITE

RAMBO ASSOCIATES	1112-91
RAMBO MINE	SAND; SAND/CLAY
JAD LAND DEVELOPMENT, INC.	1275-91
DUNLAP RODDEY SOIL MINE	SAND
BOGGS PAVING INC.	1279-91
JUDSON LAWRENCE PIT	SAND

Growth Potential

This watershed has moderate potential for growth. One major growth area is the City of York and its surrounding area where there is available water and sewer service. The nearby East York Industrial Park has several major industrial and commercial developments with room to expand. Another major growth area in the watershed is the southern and western portions of the City of Rock Hill. Portions of the towns of McConnells, Lowrys, Richburg, Fort Lawn, and Great Falls, together with the unincorporated communities of Edgemoor and Lando, are also located in this watershed. Water and sewer services in this portion of the watershed are limited to the areas around Rock Hill and Richburg, Fort Lawn, and Great Falls in Chester County. Industrial and commercial development continues to occur around the I-77/ S.C. Hwy 9 interchange near Richburg and around Rock Hill. The area surrounding McConnells and Lowrys has a high level of agricultural activity. The potential for future development is greatest near Rock Hill and York and around the I-77/S.C. Hwy 9 interchange near Richburg. A factor that may promote industrial growth is the rail service available from York and Rock Hill in York County, and Richburg, Fort Lawn, and Great Falls in Chester County.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

A TMDL was developed by SCDHEC and approved by EPA for several water quality monitoring sites in the ***Fishing Creek*** watershed including CW-029, CW-005, CW-225. CW-224, CW-008, and CW-233 along ***Fishing Creek***, CW-212 on ***Tools Fork***, CW-006 and CW-096 on ***Wildcat Creek***, CW-227 on ***Neelys Creek*** and CW-234 on ***Tinkers Creek*** to determine the maximum amount of fecal coliform bacteria they can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the sites were determined to be runoff from urban and pasture lands, failing septic systems, leaking or overflowing sanitary sewers, and livestock with uncontrolled access to streams. The TMDL states that an 84.2% reduction in fecal coliform loading from these urban and agricultural sources at monitoring site CW-029, a 69.1% reduction at sites CW-005 and CW-225, a 72.3% reduction at CW-224, a 46.3% reduction at CW-008, and a 47.5% reduction at CW-233 are necessary for these streams to meet the recreational use standard. The TMDL also states that a 97.4% reduction in fecal coliform loading from these urban and agricultural sources at monitoring site CW-212, a 79.5% reduction at CW-006, a 79.2% reduction at CW-096, and a 69.5% reduction at CW-227 and CW-234 are necessary for these streams to meet the

recreational use standard. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

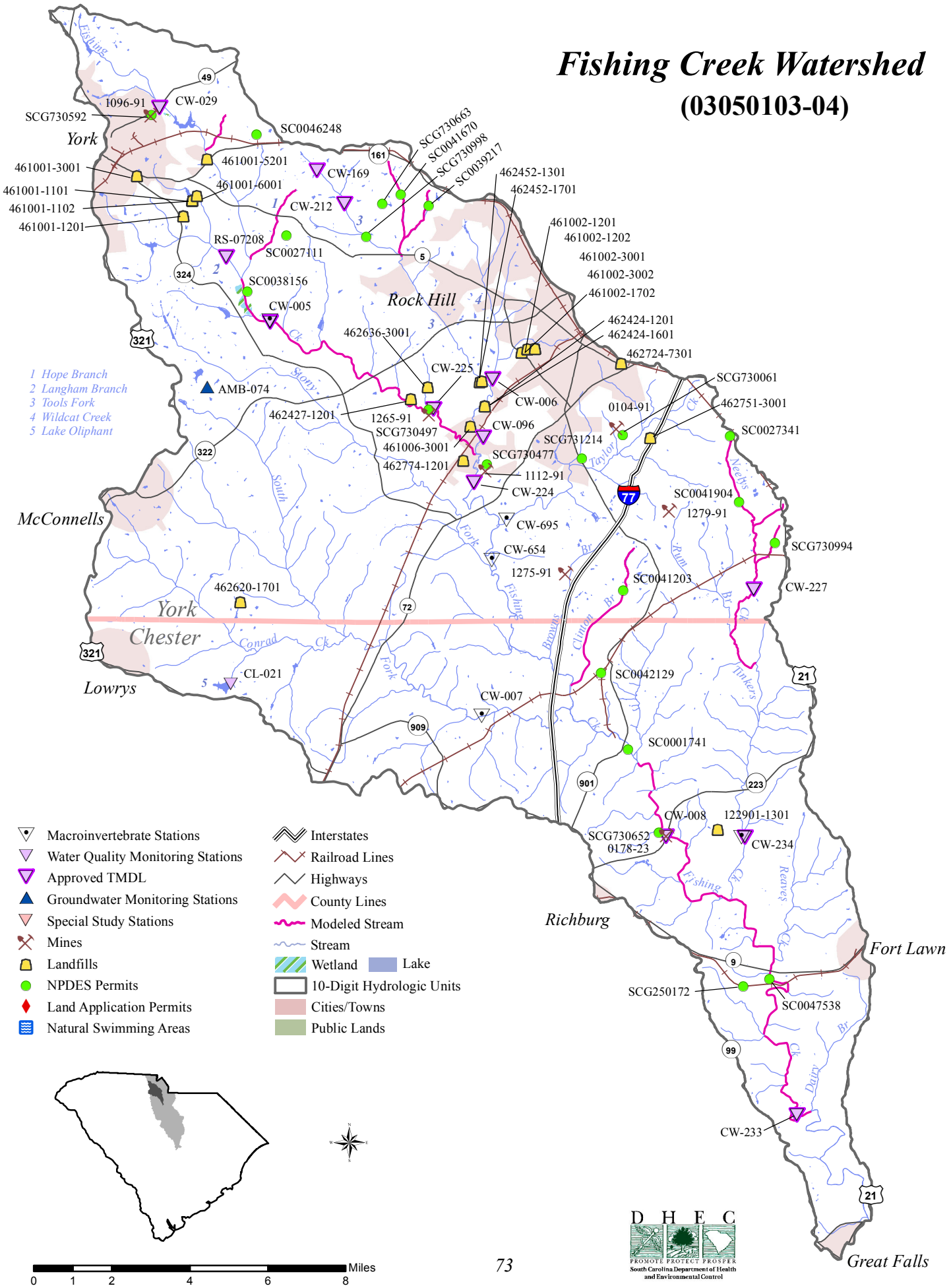
Special Projects

TMDL Implementation for Fecal Coliform in the Fishing Creek Watershed, York County, SC

A §319 implementation project to reduce the load of fecal coliform in the Fishing Creek watershed began in 2005 and ran through 2007. It was implemented by a partnership of organizations including the York and Chester Soil and Water Conservation District, Clemson Extension Service, York County Government, USDA-NRCS, Chester and York County Cattlemen's Associations and Research Planning, Inc. Best Management Practices (BMPs) and effective outreach activities were implemented at selected sites to reduce the load of fecal coliform bacteria so that state water quality standards. Due to elevated bacteria levels, the study is on-going and BMPs are being re-evaluated.

NPS Assessment and TMDL Development for Nutrients in the Catawba River Basin

SCDHEC continues to address nutrient loading concerns in the impaired reservoirs (Fishing Creek, Great Falls, and Cedar Creek Reservoirs and Lake Wateree) of the lower Catawba-Wateree Basin using the WARMF (Watershed Analysis Risk Management Framework) water quality model. This watershed model was updated previously through 2005, but changes in phosphorus loading, land use, and population made the model out dated in terms of the model time period. Significant changes in the watershed since 2005 include new phosphorus limits on the three Charlotte-Mecklenburg WWTPs in the Sugar Creek watershed, closing of two major industrial dischargers in the South Carolina portion of the basin, and a significant increase in population and developed land use in the Charlotte – Rock Hill area. In late 2012 SCDHEC began an update of the model that will incorporate these changes in the watershed and make the model as current as feasible. SCDHEC intends to use the updated model for nutrients and pH TMDLs by determining new Wasteload Allocations for point source dischargers and Municipal Separate Storm Sewer Systems (MS4s) and Load Allocations for the nonpoint sources within the Basin.


Fishing Creek Watershed
(03050103-04)
York
Rock Hill
McConnells
York
Chester
Lowrys
Richburg
Fort Lawn
Great Falls
1 Hope Branch
2 Langham Branch
3 Tools Fork
4 Wildcat Creek
5 Lake Oliphant
1096-91
CW-029
SCG730592
SC0046248
461001-3001
461001-5201
461001-1101
461001-6001
461001-1102
461001-1201
CW-169
CW-212
RS-07208
SC0027111
SC0038156
CW-005
AMB-074
462427-1201
462636-3001
SCG730663
SC0041670
SCG730998
SC0039217
462452-1301
462452-1701
461002-1201
461002-1202
461002-3001
461002-3002
461002-1702
462424-1201
462424-1601
462724-7301
CW-225
CW-006
CW-096
1265-91
SCG730497
461006-3001
462774-1201
SCG730477
1112-91
CW-224
CW-695
CW-654
1275-91
462620-1701
CL-021
CW-007
SCG731214
0104-91
SCG730061
462751-3001
SC0027341
SC0041904
1279-91
SCG730994
CW-227
SC0041203
SC0042129
SC0001741
CW-008
122901-1301
CW-234
SCG730652
0178-23
SCG250172
SC0047538
CW-233
Stony
South Fork
Fishing Ck
Conrad Ck
Taylor
Neelys
Rum Br
Clinton Br
Browns
Tinkers
Reaves Ck
Dairy Br
Interstates
Railroad Lines
Highways
County Lines
Modeled Stream
Stream
Wetland
Lake
10-Digit Hydrologic Units
Cities/Towns
Public Lands
Macroinvertebrate Stations
Water Quality Monitoring Stations
Approved TMDL
Groundwater Monitoring Stations
Special Study Stations
Mines
Landfills
NPDES Permits
Land Application Permits
Natural Swimming Areas
Miles
0 1 2 4 6 8
D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

03050103-05

(Rocky Creek)

General Description

Watershed 03050103-05 (formerly 03050103-090) is located in Chester and Fairfield Counties and consists primarily of ***Rocky Creek*** and its tributaries. The watershed occupies 127,983 acres of the Piedmont region of South Carolina. Land use/land cover in the watershed includes: 70.4% forested land, 20.5% agricultural land, 6.4% urban land, 1.6% forested wetland (swamp), 0.6% barren land, and 0.5% water.

Rocky Creek originates near the Town of Chester and accepts drainage from Grassy Run Branch, Bull Run Creek, Hooper Creek (Melton Branch), Barbers Creek (McDaniels Branch, Waters Branch), Bull Skin Creek, and Beaverdam Creek. Little Rocky Creek accepts drainage from Shannon Creek and Bell Creek (Stover Creek) before flowing into Rocky Creek. Hodges Branch and Turkey Branch drain into Rocky Creek at the base of the watershed. Rocky Creek drains into Cedar Creek Reservoir near the Town of Great Falls. There are a total of 547.9 stream miles and 342.7 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CW-088	S/W	FW	GRASSY RUN BRANCH AT SC 72 1.6 MI NE OF CHESTER
CW-002	P/W/BIO	FW	ROCKY CREEK AT S-12-335 3.5 MI E OF CHESTER
CW-708	BIO	FW	BEAVERDAM CREEK AT BRIDGE ON S-12-198 3.5 MI E OF CHESTER
RS-06171	RS06	FW	BEAVERDAM CREEK AT BRIDGE ON S-12-198 3.5 MI E OF CHESTER
CW-067	BIO	FW	LITTLE ROCKY CREEK AT S-12-144
CW-236	W/INT	FW	ROCKY CREEK AT S-12-138
CW-175	S/W	FW	CEDAR CREEK RESERVOIR/ROCKY CK ARM AT S-12-141 NW OF GREAT FALLS

Grassy Run Branch (CW-088) – Aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and turbidity. Recreational uses are not supported due to fecal coliform bacteria excursions.

Rocky Creek – There are two SCDHEC monitoring sites along Rocky Creek**.** Although macroinvertebrate communities appeared to be impacted at the upstream site ***(CW-002)***, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter. At the downstream site ***(CW-236)***, aquatic life uses are fully supported; however, there is a significant increasing trend in five-day biochemical oxygen demand. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Beaverdam Creek – There are two stations in the same general area of Beaverdam Creek. Although macroinvertebrate communities appeared to be impacted at the upstream site ***(CW-708)***, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year. At the downstream site ***(RS-06171)***, aquatic life uses are also partially supported based on macroinvertebrate community data. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Little Rocky Creek (CW-067) – Although macroinvertebrate communities appeared to be impacted at this site, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year.

Rocky Creek Arm of Cedar Creek Reservoir (CW-175) - Aquatic life uses are not supported due to total nitrogen, total phosphorus, and dissolved oxygen concentration excursions. This is compounded by a significant decreasing trend in dissolved oxygen concentration. There is a significant increasing trend in pH. Recreational uses are partially supported due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

NPDES Permitted Activities

Active NPDES Facilities

RECEIVING STREAM / ***FACILITY NAME***	***NPDES#*** / ***TYPE***
ROCKY CREEK	SC0036056
CITY OF CHESTER/ROCKY CREEK PLANT	MAJOR DOMESTIC
ROCKY CREEK TRIBUTARY	SCG250221
CHESTER WOOD PRODUCTS LLC	MINOR INDUSTRIAL
MCDANIELS BRANCH	SCG730658
GASTON PROPERTIES MINE	MINOR INDUSTRIAL
LITTLE ROCKY CREEK	SCG731119
STEVENSON-WEIR INC./HWY 97 PIT MINE	MINOR INDUSTRIAL

Nonpoint Source Permitted Activities

Land Disposal Activities

Landfill Facilities

LANDFILL NAME / ***FACILITY TYPE***	***PERMIT #*** / ***STATUS***
CHESTER WOOD PRODUCTS LANDFILL	123301-1601
INDUSTRIAL	INACTIVE

CHESTER COUNTY C&D LANDFILL CONSTRUCTION	121001-1101 INACTIVE
CHESTER COUNTY C&D LANDFILL CONSTRUCTION	121003-1201 ACTIVE
CHESTER COUNTY TRANSFER STATION MUNICIPAL	121001-6001 ACTIVE
CHESTER COUNTY WOOD CHIPPING FACILITY COMPOSTING	121001-3001 INACTIVE
HYONEX COMPOSTING SITE COMPOSTING	123331-3001 ACTIVE

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
GASTON & GASTON GASTON PROPERTIES	1567-23 SAND/TOP SOIL

Growth Potential

This watershed has moderate potential for growth and contains portions of the Towns of Richburg and Great Falls, and the City of Chester. Residential, commercial, and industrial developments are located in the City of Chester and extend north and east of the city, along U.S. Hwy 321 and S.C. Hwys 72, 9 and 97. Industrial, residential, and commercial growth has occurred in the Richburg area, associated with the I-77/S.C. Hwy 9 interchange and near Great Falls because of the presence of utilities in those areas. Water service is available in the City of Chester, along S.C. Hwy 9 to Fort Lawn, and down S.C. Hwy 99 to Great Falls. Sewer service exists in Chester, Great Falls, Richburg, and the surrounding areas. The presence of I-77 will continue to have an impact on future growth in the watershed, especially in the Richburg area. The County's other important transportation artery, S.C. Hwy 9, has now been widened to four lanes between Chester and Fort Lawn. Rail service is available along the S.C. Hwy 72 and 9 corridors. The remainder of the watershed is rural and will continue to see scattered development in the future.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

A TMDL was developed by SCDHEC and approved by EPA for ***Grassy Run Branch*** water quality monitoring site CW-088 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the stream were determined to be runoff from urban areas in the watershed. The TMDL states that an 86% reduction in fecal coliform loading from urban sources is necessary for the stream to meet the recreational use standard.

A TMDL was also developed by SCDHEC and approved by EPA for ***Rocky Creek*** water quality monitoring sites CW-002, CW-236, and CW-175 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the stream were determined to be runoff from urban and agricultural areas in the watershed, including failing septic systems, leaking and overflowing sanitary sewers, and cattle-in-streams. The TMDL states that an 83% reduction in fecal coliform loading from urban and agricultural sources is necessary for the stream to meet the recreational use standard. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

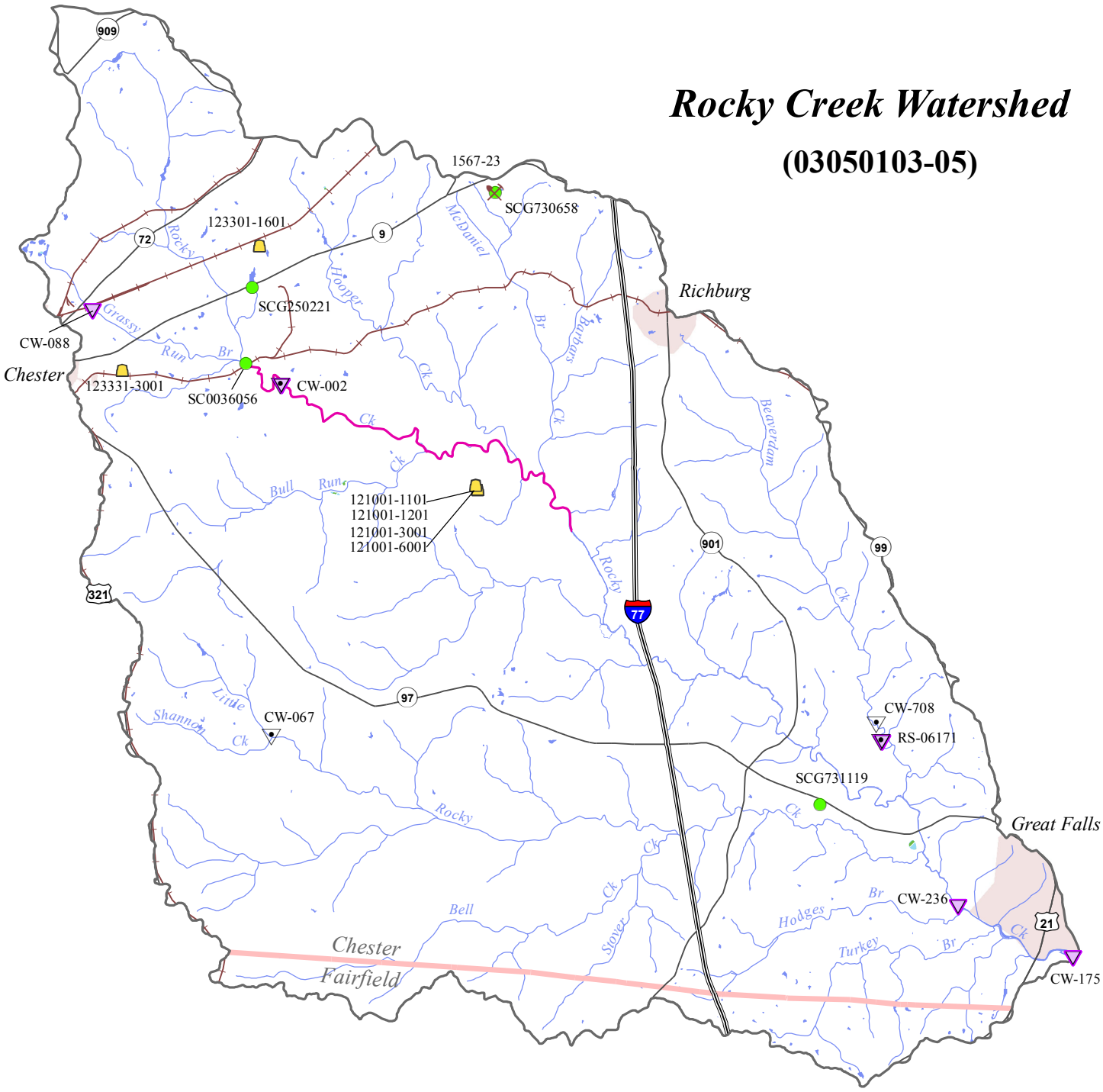
Special Projects

TMDL Implementation for Rocky Creek and the Catawba River

In 2004, Research Planning, Inc., the City of Columbia, and the Clemson University Extension Service cooperatively initiated a three-year project to improve water quality in the Rocky Creek watershed by reducing fecal coliform bacteria concentrations and implementing a TMDL. The project implemented agricultural best management practices (BMPs) on seven targeted farms in the watershed. The project also addressed residential fecal coliform sources by implementing septic system improvements. The data collected at the four impaired monitoring sites in the watershed (CW-002, CW-236, CW-175, and CW-174) indicate water quality improvement at three of those sites after installing selected BMPs. These improvements have resulted in the project being considered a 319 success story by the USEPA. TMDL implementation efforts have continued in the watershed with the goal of improving water quality until data from all four stations fully meet water quality standards for bacteria.

NPS Assessment and TMDL Development for Nutrients in the Catawba River Basin

SCDHEC continues to address nutrient loading concerns in the impaired reservoirs (Fishing Creek, Great Falls, and Cedar Creek Reservoirs and Lake Wateree) of the lower Catawba-Wateree Basin using the WARMF (Watershed Analysis Risk Management Framework) water quality model. This watershed model was updated previously through 2005, but changes in phosphorus loading, land use, and population made the model out dated in terms of the model time period. Significant changes in the watershed since 2005 include new phosphorus limits on the three Charlotte-Mecklenburg WWTPs in the Sugar Creek watershed, closing of two major industrial dischargers in the South Carolina portion of the basin, and a significant increase in population and developed land use in the Charlotte – Rock Hill area. In late 2012 SCDHEC began an update of the model that will incorporate these changes in the watershed and make the model as current as feasible. SCDHEC intends to use the updated model for nutrients and pH TMDLs by determining new Wasteload Allocations for point source dischargers and Municipal Separate Storm Sewer Systems (MS4s) and Load Allocations for the nonpoint sources within the basin.



- Macroinvertebrate Stations
- Water Quality Monitoring Stations
- Approved TMDL
- Groundwater Monitoring Stations
- Special Study Stations
- Mines
- Landfills
- NPDES Permits
- Land Application Permits
- Natural Swimming Areas
- Interstates
- Railroad Lines
- Highways
- County Lines
- Modeled Stream
- Stream
- Wetland
- Lake
- 10-Digit Hydrologic Units
- Cities/Towns
- Public Lands

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

0 0.5 1 2 3 4 5 6 Miles

03050103-06

(Catawba River)

General Description

The South Carolina portion of watershed 03050103-06 (formerly 03050103-010, a portion of 030, 080) is located in York, Chester, and Lancaster Counties and consists primarily of the ***Catawba River*** and its tributaries from the Lake Wylie dam to Big Wateree Creek. The watershed occupies 142,532 acres of the Piedmont region of South Carolina. Land use/land cover in the watershed includes: 61.3% forested land, 17.8% urban land, 15.3% agricultural land, 4.4% water, 0.7% forested wetland (swamp), and 0.5% barren land.

The Catawba River flows through the Catawba Dam near the Town of Fort Mill, and is joined by Johnnytown Branch, Big Dutchman Creek (Little Dutchman Creek), Hidden Creek, Dye Branch (Jones Branch), Manchester Creek, and Burgis Creek (all originating near the City of Rock Hill) before accepting drainage from the Sugar Creek watershed. Downstream from the Sugar Creek drainage, the Catawba River flows past the Catawba Indian Reservation and is joined by Haggins Branch, Sixmile Creek (Barber Creek), Ferry Branch, Abernathy Creek, Greene Creek, the Twelvemile Creek watershed, and Waxhaw Creek (Causar Branch, Andrew Jackson State Park Lake, Mill Branch, Foster Branch). The Landsford Canal connects the bend in the river where the Twelvemile Creek watershed enters. Further downstream, the river accepts the drainage of Rock Water Spring Branch, Dunn Creek, and the Cane Creek watershed near the Town of Fort Lawn. The Catawba River then flows into Fishing Creek Reservoir, which is impounded by the Fishing Creek Dam. Bear Creek forms an arm of the reservoir.

The Catawba River is dammed again just downstream of the Fishing Creek Dam and the flow diverted to form Great Falls Reservoir. The retention time for Great Falls Reservoir is approximately one day, and essentially functions as an expanded area of the diverted Catawba River. The Fishing Creek watershed drains into Great Falls Reservoir just below the Fishing Creek Dam. Great Falls Reservoir is impounded by the Dearborn Dam, and together with the Cedar Creek Dam downstream serve to back the water up into the true Catawba River bed to form Cedar Creek Reservoir. The section of the Catawba River upstream of Cedar Creek Reservoir and downstream of the Catawba River Diversion Dam is dry and serves as an emergency spillway. Great Falls Reservoir also has a dam between it and this dry section used for periods of flood. Camp Creek originates near the City of Lancaster and accepts the drainage of Dry Creek before flowing into Cedar Creek Reservoir. The Rocky Creek watershed drains into the section of Cedar Creek Reservoir between the Dearborn Dam and the Cedar Creek Dam. Debutary Creek drains into and forms an arm of Cedar Creek Reservoir just above the Cedar Creek Dam. Duke Power Company oversees the operation of these reservoirs, and they are used for power generation as well as recreation. Fishing Creek Reservoir is used as water supply. Andrew Jackson State Park is another natural resource in the area. There are a total of 710.0 stream miles in this portion of Catawba River

watershed extending into North Carolina (610.7 miles within South Carolina) and 4,005.8 acres of lake waters (3,926.2 acres within South Carolina), all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CW-221	S/W	FW	HIDDEN CREEK AT HWY. 161, 0.4 MI W OF I-77
CW-014	P/SPRP	FW	CATAWBA RIVER AT US 21
RS-06176	RS06	FW	SIXMILE CREEK AT BRIDGE ON S-46-691, 2.9MI NE OF RODDY
CW-041	PSPRP	FW	CATAWBA RIVER AT SC 5 ABOVE BOWATER
CW-145	W/INT	FW	WAXHAW CREEK AT S-29-29
CW-016	P/INT	FW	CATAWBA RIVER AT SC 9 AT FORT LAWN
CW-016F	P/W	FW	FISHING CREEK RESERVOIR 2 MI BELOW CANE CREEK
CW-057	P/INT	FW	FISHING CREEK RESERVOIR 75 FT ABOVE DAM NEAR GREAT FALLS
RL-05414	RL05	FW	GREAT FALLS RESERVOIR, 1.0 MI E JUNCTION OF SC 99 AND US 21
RL-08062	RL08	FW	GREAT FALLS RESERVOIR, 0.9 MI OF NITROLEE, W SIDE OF CUT BETW 2 ISLANDS
RL-04379	RL04	FW	CEDAR CREEK RESERVOIR, 1.25 MI ESE OF GREAT FALLS, NW OF HILL ISLAND
CW-235	W/INT	FW	CAMP CREEK AT SC 97
RL-06431	RL06	FW	CEDAR CREEK RESERVOIR, 1.6 MI SE OF GREAT FALLS, E OF BIG ISLAND
RL-01007	RL01	FW	CEDAR CREEK RESERVOIR, 2.15 MI SE OF GREAT FALLS
RL-04375	RL04	FW	CEDAR CREEK RESERVOIR, 2.2 MI SE OF GREAT FALLS, SE OF BOWDEN ISLAND
RL-07003	RL07	FW	CEDAR CREEK RES. NEAR E SHORE OF PICKETT ISLAND, 0.5MI NNW OF S-29-405
RL-05391	RL05	FW	CEDAR CREEK RESERVOIR, 0.42 MI NNW OF S-29-405 ON LANCASTER/CHESTER LINE
RL-06443	RL06	FW	CEDAR CREEK RESERVOIR, 2.3 MI SE OF GREAT FALLS, S OF PICKETT ISLAND
RL-06429	RL06	FW	CEDAR CREEK RESERVOIR, 1.2 MI SE OF GREAT FALLS, W OF BIG ISLAND
CW-174	S/W	FW	CEDAR CREEK RES. AT UNIMPROVED RD ABOVE JUNCTION WITH ROCKY CREEK
RL-08046	RL08	FW	CEDAR CREEK RES., 0.27 MI SE OF S-12-141 BELOW GREAT FALLS DAM
RL-05416	RL05	FW	CEDAR CREEK RES., 0.4 MI E OF DEBUTARY CK & S-20-268
CW-033	W	FW	CEDAR CREEK RESERVOIR 100 M N OF DAM

Hidden Creek (CW-221) – Aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and turbidity. Recreational uses are not supported due to fecal coliform bacteria excursions.

Catawba River – There are three SCDHEC monitoring sites along the Catawba River in this watershed. At the upstream site ***(CW-014)***, aquatic life uses are fully supported; however, there is a significant increasing trend in five-day biochemical oxygen demand. A significant decreasing trend in total nitrogen concentration suggests improving conditions for this parameter. Recreational uses are fully supported. At the midstream site ***(CW-041)***, aquatic life and recreational uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand, total nitrogen concentration, total suspended solids, and fecal coliform bacteria concentration.

At the downstream site ***(CW-016)***, aquatic life and recreational uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and total nitrogen concentration. There is a significant increasing trend in pH. Significant increasing trends in dissolved oxygen concentration and decreasing trends in total phosphorus concentration suggest improving conditions for these parameters.

Sixmile Creek (RS-06176) **-** Aquatic life uses are partially supported based on macroinvertebrate community data. Recreational uses are fully supported.

Waxhaw Creek (CW-145) **–** Aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life chronic criterion. In addition, there is a significant increasing trend in five-day biochemical oxygen demand. Recreational uses are not supported due to fecal coliform bacteria excursions.

Fishing Creek Reservoir **–** There are two SCDHEC monitoring sites along Fishing Creek Reservoir and recreational uses are fully supported at both sites. At the uplake site ***(CW-016F)***, aquatic life uses are not supported due to total nitrogen and total phosphorus concentration excursions. In addition, there is a significant increasing trend in total nitrogen concentration. Significant decreasing trends in turbidity and fecal coliform bacteria concentration suggest improving conditions for these parameters. At the downlake site ***(CW-057)***, aquatic life uses are not supported due to total nitrogen, total phosphorus, and pH excursions. In addition, there are significant increasing trends in five-day biochemical oxygen demand and total nitrogen concentration. There is a significant increasing trend in pH. Significant decreasing trends in turbidity, total phosphorus concentration, and fecal coliform bacteria concentration suggest improving conditions for these parameters at this site.

Great Falls Reservoir - There are two SCDHEC monitoring sites along Great Falls Reservoir and recreational uses are fully supported at both sites. At the uplake site ***(RL-05414)***, aquatic life uses are not supported due to total phosphorus concentration excursions. At the downlake site ***(RL-08062)***, aquatic life uses are not supported due to total nitrogen and total phosphorus concentration excursions.

Cedar Creek Reservoir - There are twelve SCDHEC monitoring sites along Cedar Creek Reservoir and recreational uses are supported at all sites. Moving from uplake to downlake, aquatic life uses are not supported due to total phosphorus concentration excursions at stations ***RL-04379, RL-06431, RL-01007***, and ***RL-04375***. Aquatic life uses are fully supported at ***RL-07003***. Although pH excursions occurred at this site, they were typical of values seen in lake systems and were considered natural, not standards violations. At ***RL-05391***, aquatic life uses are not supported due to total phosphorus concentration excursions. Aquatic life uses at station ***RL-06443*** are partially supported due to pH excursions. At ***RL-06429***, aquatic life uses are not supported due to total phosphorus concentration excursions. Although dissolved oxygen excursions occurred at this site, they were typical of values seen in lake systems and were considered natural, not standards violations. Aquatic life uses are not supported at ***CW-174*** due to total phosphorus excursions. In addition, there are significant decreasing trends in dissolved oxygen concentration and increasing trends in five-day biochemical oxygen demand. Aquatic life uses are not supported at ***RL-08046*** due to total nitrogen and total phosphorus excursions, and at ***RL-05416*** and ***CW-033*** due to total phosphorus excursions.

Camp Creek (CW-235) - Aquatic life uses are fully supported. Although pH excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Recreational uses are not supported due to fecal coliform bacteria excursions.

*A fish consumption advisory has been issued by the Department for PCBs and includes the Catawba River, Fishing Creek Reservoir, and Cedar Creek Reservoir within this watershed (see advisory p.*38*).*

NPDES Permitted Activities

Active NPDES Facilities

RECEIVING STREAM ***FACILITY NAME***	***NPDES#*** ***TYPE***
CATAWBA RIVER ABIBOW US INC.	SC0001015 MAJOR INDUSTRIAL
CATAWBA RIVER SPRINGS INDUSTRIES/GRACE COMPLEX	SC0003255 MAJOR INDUSTRIAL
CATAWBA RIVER CITY OF ROCK HILL/MANCHESTER CREEK PLANT	SC0020443 MAJOR DOMESTIC
CATAWBA RIVER TOWN OF FT. MILL WWTP	SC0020371 MAJOR DOMESTIC
CATAWBA RIVER CITY OF LANCASTER/MAIN PLANT	SC0046892 MAJOR DOMESTIC
CATAWBA RIVER LANCASTER COUNTY P&D/FOSTER PLANT	SC0027391 MINOR INDUSTRIAL
CATAWBA RIVER LANCASTER COUNTY/INDIANLAND WWTP	SC0047864 MAJOR DOMESTIC
CATAWBA RIVER NATION FORD CHEMICAL CO. (R-M INDUSTRIES)	SC0035360 MINOR INDUSTRIAL
CATAWBA RIVER (CEDAR CREEK RES.) TOWN OF GREAT FALLS WWTP	SC0021211 MAJOR DOMESTIC
CATAWBA RIVER TRIBUTARY INCHEM CORP.	SCG250111 MINOR INDUSTRIAL
CAUSAR CREEK SARATOGA PROPERTIES LLC	SC0041807 MINOR DOMESTIC
BURGIS CREEK TRIBUTARY EDGAR SMITH/QUAIL MEADOW MHP	SC0028622 MINOR DOMESTIC
BARBER CREEK UTILITIES OF SC/SHANDON SD	SC0027189 MINOR DOMESTIC

ABERNATHY CREEK	SC0032417
CEDAR VALLEY MHP	MINOR DOMESTIC
MANCHESTER CREEK TRIBUTARY	SCG250249
AQUASOL CORP./ROCK HILL	MINOR INDUSTRIAL
MANCHESTER CREEK	SCG730587
CORNERSTONE DEV. OF THE CAROLINAS	MINOR INDUSTRIAL
CATAWBA RIVER	SCG730642
BORAL BRICK INC./FAILE MINE	MINOR INDUSTRIAL
SIXMILE CREEK TRIBUTARY	SCG731175
UNITED CONTRACTORS/SC 5 CATAWBA MINE	MINOR INDUSTRIAL

Municipal Separate Storm Sewer Systems (MS4)

RECEIVING STREAM	***NPDES#***
MUNICIPALITY	***MS4 PHASE***
RESPONSIBLE PARTY	***MS4 SIZE***
IMPLEMENTING PARTY	
FISHING CREEK RESERVOIR-CATAWBA RIVER	SCR039101
FORT MILL	PHASE II
FORT MILL	SMALL MS4
FORT MILL	
FISHING CREEK RESERVOIR-CATAWBA RIVER	SCR039102
ROCK HILL	PHASE II
ROCK HILL	SMALL MS4
ROCK HILL	
FISHING CREEK RESERVOIR-CATAWBA RIVER	SCR039104
UNINCORPORATED AREAS	PHASE II
YORK COUNTY	SMALL MS4
YORK COUNTY	

Nonpoint Source Permitted Activities

Land Disposal Activities

Landfill Facilities

LANDFILL NAME	***PERMIT #***
FACILITY TYPE	***STATUS***
TOWN OF GREAT FALLS	121002-1201
C/C INDUSTRIAL	INACTIVE
TOWN OF GREAT FALLS	----------
C/C INDUSTRIAL	INACTIVE
TOWN OF GREAT FALLS	----------
C/C MSW	INACTIVE

TOWN OF GREAT FALLS COMPOSTING	121002-3001 ACTIVE
TOWN OF GREAT FALLS C&D	121002-1701 INACTIVE
TOWN OF GREAT FALLS ----------	---------- INACTIVE
GREENS OF ROCK HILL ISW LANDFILL INDUSTRIAL	463312-1601 ACTIVE
GREENS OF ROCK HILL ISW ASH MONOFILL INDUSTRIAL	463312-1602 ACTIVE
BOWATER, INC. ISW LANDFILL INDUSTRIAL	463318-1601 ACTIVE
BOWATERS CAROLINA CORP. INDUSTRIAL	---------- INACTIVE
BOWATERS CAROLINA CORP. INDUSTRIAL	---------- INACTIVE
COMBS SHORT-TERM C&D LANDFILL C&D	292903-1301 INACTIVE
LANCASTER COUNTY LCD&YT LANDFILL C&D	291001-1703 ACTIVE
LANCASTER COUNTY COMPOSTING FACILITY COMPOSTING	291001-3001 ACTIVE
CITY OF LANCASTER SW TRANSFER STATION MSW TRANSFER STATION	291003-6001 ACTIVE
CITY OF LANCASTER MSW LANDFILL MSW	--------- INACTIVE
INDUSTRIAL CHEMICAL CO., INC. INDUSTRIAL	---------- INACTIVE
CREEKSIDE OF YORK COUNTY LCD C&D	462748-1701 ACTIVE

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
BORAL BRICKS, INC. FAILE MINE	0778-57 CLAY
DEESE HAULING & GRADING JJL & N PIT	1221-91 SAND

Growth Potential

This watershed has moderate to high growth potential and contains portions of the cities of Rock Hill and Fort Mill in the upper portion of the watershed. On the Fort Mill side of the Catawba River, there is a relatively wide floodplain, which will limit development adjacent to the river. Water and sewer service is available to most of the area on this side of the river, which includes a large portion of the Town of Fort Mill and the residential area west of the town. Potential growth areas include residential expansion around Fort Mill and new commercial and industrial development around the I-77/ S.C. Hwy 160 interchange. On the Rock Hill side of the river, there is extensive residential development in the city with other developed residential areas to the east in the Catawba and Lesslie communities. Major industrial and commercial development has occurred to the east of Rock Hill along the Dave Lyle Blvd and Cell River corridors (the Waterford area) where water and sewer service is available and the large Resolute paper mill complex is located to the south. Extension of a water line from Rock Hill to Resolute along the U.S. Hwy 21/S.C. Hwy 5 corridor provides opportunities for higher density development in the area.

Portions of the Towns of Fort Lawn and Great Falls are located in the lower portion of this watershed. There is a concentrated area of industrial development along S.C. Hwy 9 between Fort Lawn and the City of Lancaster, and there is a limited residential development along the shoreline of Fishing Creek Reservoir. There is public water and sewer service in the Towns of Fort Lawn and Great Falls and water along portions of S.C. Hwy 9 and U.S. Hwy 21, but growth prospects are limited in this area of the watershed.

Lancaster County continues to develop a mixed-use community, “Catawba Ridge”, along Fishing Creek Reservoir. The development would extend from S.C. Hwy 9down to S.C. Hwy 200, within the County. To date, some residential developers have purchased acreage in the development with some limited housing construction underway.

Several additional factors will influence future development in the watershed. The presence of I-77 provides excellent access to the Charlotte, N.C. and Columbia, S.C. urban areas, encouraging residential, industrial, distribution, and commercial development. The proposed Dave Lyle Boulevard Extension will be built across the Catawba River into Lancaster County, opening up large areas with good access to Rock Hill and I-77. Rock Hill’s Waterford area will continue to expand its existing office, manufacturing, commercial, distribution, and residential uses as will the section of S.C. Hwy 160 between Fort Mill and I-77. The Catawba Indian Nation is continuing to develop its tribal lands along the river. Rail service from Rock Hill and Fort Mill is available into the Charlotte metropolitan area. The available industrial and commercial sites near Rock Hill and Fort Mill complete with infrastructure and the presence of I-77 all point to continued growth into the future for this portion of the watershed.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

A TMDL was developed by SCDHEC and approved by EPA for ***Hidden Creek*** water quality monitoring site CW-221 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary source of fecal coliform to the stream was determined to be runoff from urban areas in the watershed. The TMDL states that a 19% reduction in fecal coliform loading from urban sources is necessary for the stream to meet the recreational use standard.

A TMDL was developed by SCDHEC and approved by EPA for ***Camp Creek*** monitoring site CW-235 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the stream were determined to be runoff from agricultural lands. The TMDL states that a 44% reduction in fecal coliform loading from agricultural sources is necessary for the stream to meet the recreational use standard.

A TMDL was also developed by SCDHEC and approved by EPA for ***Cedar Creek Reservoir*** water quality monitoring site CW-174 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the stream were determined to be runoff from urban and agricultural areas in the watershed, including failing septic systems, leaking and overflowing sanitary sewers, and cattle-in-streams. The TMDL states that an 83% reduction in fecal coliform loading from urban and agricultural sources is necessary for the stream to meet the recreational use standard.

A TMDL was developed by SCDHEC and approved by the EPA for ***Dutchmans Creek*** in Fairfield County (monitoring site RS-02321). The TMDL determines the maximum amount of fecal coliform bacteria that Dutchman Creek at RS-02231 can receive from all pollution sources and still meet water quality standards. At the time the TMDL was approved there were no permitted continuous dischargers of fecal coliform in the watershed. Also the only non-continuous discharger in the watershed with potential to discharge fecal coliform was SC DOT. Potential sources of fecal coliform pollution in the watershed that have been determined to be contributors to the Dutchmans Creek impairment include direct loading from livestock, failing septic systems, wildlife, and other agricultural sources. The TMDL would require a reduction of 63% in the current load to the creek to meet standards.

A TMDL was developed for SCDHEC using the load duration curve methodology and approved by the EPA for ***Waxhaw Creek*** in Union County, NC and Lancaster County, SC (monitoring site CW-145). The TMDL determines the maximum amount of fecal coliform bacteria that Waxhaw Creek at CW-145 can receive from all pollution sources and still meet water quality standards. At the time the TMDL was approved there was one permitted continuous dischargers of fecal coliform in the South Carolina portion of the watershed. At that time no non-continuous dischargers were identified in the watershed. Potential sources of fecal coliform pollution in the watershed contributing to the impairment of Waxhaw Creek include grazing cattle, wildlife, land

application of manure, and failing septic systems. The TMDL requires a reduction of 86% in the current nonpoint source load to the creek to meet standards. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

Special Projects

NPS Assessment and TMDL Development for Nutrients in the Catawba River Basin

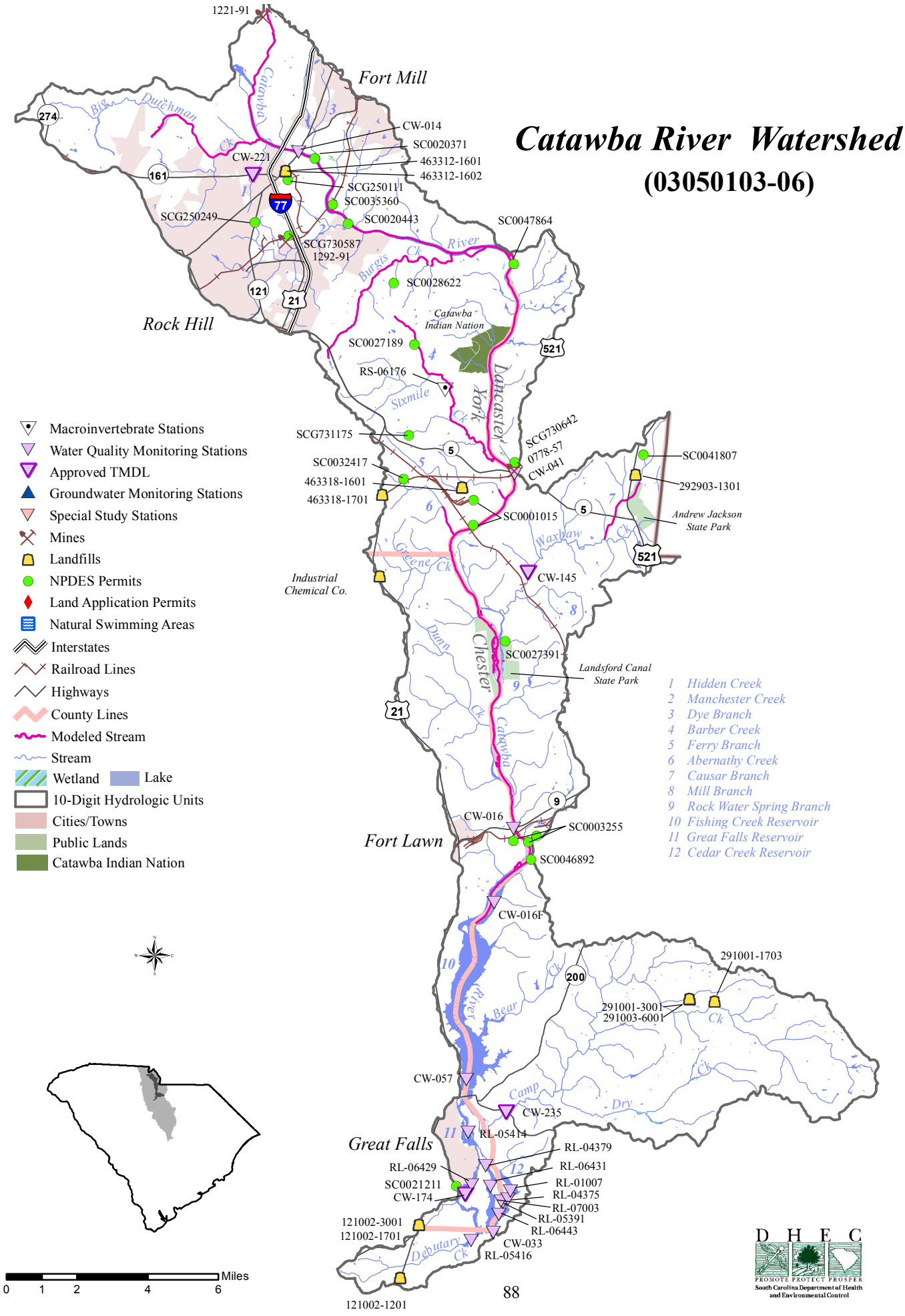
SCDHEC continues to address nutrient loading concerns in the impaired reservoirs (Fishing Creek, Great Falls, and Cedar Creek Reservoirs and Lake Wateree) of the lower Catawba-Wateree Basin using the WARMF (Watershed Analysis Risk Management Framework) water quality model. This watershed model was updated previously through 2005, but changes in phosphorus loading, land use, and population made the model out dated in terms of the model time period. Significant changes in the watershed since 2005 include new phosphorus limits on the three Charlotte-Mecklenburg WWTPs in the Sugar Creek watershed, closing of two major industrial dischargers in the South Carolina portion of the basin, and a significant increase in population and developed land use in the Charlotte – Rock Hill area. In late 2012 SCDHEC began an update of the model that will incorporate these changes in the watershed and make the model as current as feasible. SCDHEC intends to use the updated model for nutrients and pH TMDLs by determining new Wasteload Allocations for point source dischargers and Municipal Separate Storm Sewer Systems (MS4s) and Load Allocations for the nonpoint sources within the Basin.

Catawba River Water Supply Project Expansion

The Catawba River Water Supply Project (CRWSP) is a joint venture between Lancaster County in South Carolina and Union County in North Carolina, which provides drinking water to the majority of both counties. To better manage water supplies during drought conditions, the CRWSP plans to expand its off-river reservoir to provide additional storage and less reliance on Catawba River flows.

Catawba Indian National Water Quality Monitoring Initiative

The Catawba Indian Nation is South Carolina's only federally recognized Indian tribe. With tribal lands situated along the Catawba River near Rock Hill, the Catawbas have a strong interest in water issues. The tribe has specifically expressed interest in conducting water quality monitoring and protecting traditional recreational activities along the Catawba River and its tributaries.


Catawba River Watershed
(03050103-06)
Fort Mill
Rock Hill
Fort Lawn
Great Falls
Industrial Chemical Co.
Catawba Indian Nation
Andrew Jackson State Park
Landsford Canal State Park
1221-91
CW-014
SC0020371
463312-1601
463312-1602
CW-221
SCG250111
SC0035360
SC0020443
SCG250249
SCG730587
1292-91
SC0047864
SC0028622
SC0027189
RS-06176
SCG731175
SC0032417
463318-1601
463318-1701
SCG730642
0778-57
CW-041
SC0041807
292903-1301
SC0001015
CW-145
SC0027391
CW-016
SC0003255
SC0046892
CW-016F
291001-1703
291001-3001
291003-6001
CW-057
CW-235
RL-05414
RL-04379
RL-06429
RL-06431
SC0021211
CW-174
RL-01007
RL-04375
RL-07003
RL-05391
RL-06443
121002-3001
121002-1701
CW-033
RL-05416
121002-1201
1 Hidden Creek
2 Manchester Creek
3 Dye Branch
4 Barber Creek
5 Ferry Branch
6 Abernathy Creek
7 Causar Branch
8 Mill Branch
9 Rock Water Spring Branch
10 Fishing Creek Reservoir
11 Great Falls Reservoir
12 Cedar Creek Reservoir
Macroinvertebrate Stations
Water Quality Monitoring Stations
Approved TMDL
Groundwater Monitoring Stations
Special Study Stations
Mines
Landfills
NPDES Permits
Land Application Permits
Natural Swimming Areas
Interstates
Railroad Lines
Highways
County Lines
Modeled Stream
Stream
Wetland
Lake
10-Digit Hydrologic Units
Cities/Towns
Public Lands
Catawba Indian Nation
Miles
0 1 2 4 6
D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Wateree River Basin Description

The ***Wateree River Basin (hydrologic unit 03050104)*** is located in Fairfield, Kershaw, Sumter, Richland, Lancaster, and Lee Counties, and encompasses 1,257 square miles that extend across the Piedmont, Sandhills, and Upper Coastal Plain regions of South Carolina. The Wateree River Basin encompasses 4 watersheds and some 800,000 acres of which 56.4% is forested land, 18.1% is agricultural land, 15.2% is forested wetland, 6.8% is urban land, 2.3% is water, 0.7% is barren land, and 0.5% is nonforested wetland. There are a total of 2,728.9 stream miles and 15,946.7.8 acres of lake waters in the Wateree River Basin.

The Catawba River joins Big Wateree Creek to form the Wateree River, which flows through Lake Wateree. Grannies Quarter Creek and Sawneys Creek flow into the Wateree River downstream of Lake Wateree. Twentyfive Mile Creek and Big Pine Tree Creek enter the river near the City of Camden, followed by Swift Creek, Spears Creek, and Colonels Creek before merging with the Congaree River Basin to form the Santee River Basin.

Physiographic Regions

The State of South Carolina has been divided into six Major Land Resource Areas (MLRAs) by the USDA Soil Conservation Service. The MLRAs are physiographic regions that have soils, climate, water resources and land uses in common. The physiographic regions that define the Wateree Basin are as follows:

The **Piedmont** is an area of gently rolling to hilly slopes with narrow stream valleys dominated by forests, farms and orchards; elevations range from 375 to 1,000 feet.

The **Sand Hills** are an area of gently sloping to strongly sloping uplands with a predominance of sandy areas and scrub vegetation; elevations range from 250 to 450 feet.

The **Upper Coastal Plain** is an area of gentle slopes with increased dissection and moderate slopes in the northwestern section that contain the state's major farming areas; elevations range from 100 to 450 feet.

Land Use/Land Cover

General land use/land cover mapping for South Carolina was derived from the 2006 National Land Cover Data (NLCD). The dataset is based on nationwide Landsat Thematic Mapper (TM) multispectral satellite images (furnished through the Multi-Resolution Land Characteristics (MRLC) consortium, coordinated by USEPA) using image analysis software to inventory the Nation's land classes. The NLCD are developed by the USGS (EROS Data Center) using TM image interpretation, air photo interpretation, National Wetland Inventory data analysis, and ancillary data analysis.

Urban land is characterized by man-made structures and artificial surfaces related to industrial, commercial, and residential uses, and vegetated portions of urban areas such as recreational grass lands and industrial facility lawns.

Agricultural/Grass land is characterized by row crops, pastures, orchards, vineyards, and hay land, and includes grass cover in fallow, scrub/shrub, forest clearcut and urban areas.

Forest land is characterized by deciduous and evergreen trees (or a mix of these), not including forests in wetland settings, generally greater than 6 meters (approximately 20 feet) in height, with tree canopy of 25-100% cover.

Forested Wetland is saturated bottomland, mostly hardwood, forests primarily composed of wooded swamps occupying river floodplains, moist marginal forests, and isolated low-lying wet areas, located predominantly in the Coastal Plain.

Nonforested Wetland is saturated marshland, most commonly located in coastal tidelands and in isolated freshwater inland areas, found predominantly in the Coastal Plain.

Barren land is characterized by a nonvegetated condition of the land, both natural (rock, beaches, nonvegetated flats) and man-induced (rock quarries, mines, and areas cleared for construction in urban areas or clearcut forest areas).

Water (non-land) includes both fresh (inland) and saline (tidal) waters.

Soil Types

The individual soil series for the Wateree River Basin are described as follows.

Ailey soils are well drained loamy and sandy soils with clayey or loamy subsoil.

Alpin soils are well drained and excessively drained, sandy soils with a loamy or sandy subsoil.

Badin soils are moderately deep, well drained, moderately permeable, clayey soils that formed in material weathered from Carolina Slate or other fine grained rock, on ridgetops and side slopes.

Chastain soils are poorly drained to well drained soils that are clayey or loamy throughout and subject to flooding.

Chewacla soils are nearly level, somewhat poorly drained and well drained soils.

Georgeville soils are gently sloping to sloping, well drained and moderately well drained soils.

Goldston soils are dominantly sloping to steep, well drained to excessively drained soils.

Helena soils are gently sloping to sloping, moderately well drained to well drained soils.

Herndon soils are gently sloping to sloping, well drained and moderately well drained soils.

Lakeland soils are well drained, sandy soils with loamy subsoil and excessively drained soils.

Lucy soils are well drained to poorly drained soils, some with a sandy surface layer and a loamy subsoil, and some are sandy throughout and subject to flooding.

Madison soils are well drained, moderately sloping soils, with clayey subsoil, moderately deep.

Pelion soils are well drained and moderately well drained soils that have a sandy surface layer and a loamy subsoil, many with a fragipan in the subsoil.

Rion soils are well drained, gently sloping to steep, deep to moderately deep clayey and loamy soils.

Tatum soils are dominantly sloping to steep, well drained to excessively drained soils, with a loamy subsoil, moderately deep or shallow to weathered rock.

Tawcaw soils are poorly drained to well drained soils that are clayey or loamy throughout and are subject to flooding.

Vaucluse soils are well drained, loamy and sandy soils with clayey or loamy subsoil.

Wagram soils are well drained to very poorly drained, depressional to nearly level and gently sloping soils with a loamy to sandy surface layer and a clayey to loamy subsoil.

Wateree soils are well drained, loamy soils with a loamy or clayey subsoil.

Wilkes soils are dominantly strongly sloping to steep, well drained soils.

Winnsboro soils are well drained, gently sloping to steep, moderately deep to deep clayey soils.

Slope and Erodibility

The definition of soil erodibility differs from that of soil erosion. Soil erosion may be more influenced by slope, rainstorm characteristics, cover, and land management than by soil properties. Soil erodibility refers to the properties of the soil itself, which cause it to erode more or less easily than others when all other factors are constant.

The soil erodibility factor, K, is the rate of soil loss per erosion index unit as measured on a unit plot, and represents an average value for a given soil reflecting the combined effects of all the soil properties that significantly influence the ease of soil erosion by rainfall and runoff if not protected. The K values closer to 1.0 represent higher soil erodibility and a greater need for best management practices to minimize erosion and contain those sediments that do erode. The range of K-factor values in the Wateree River Basin is from 0.10 to 0.43.

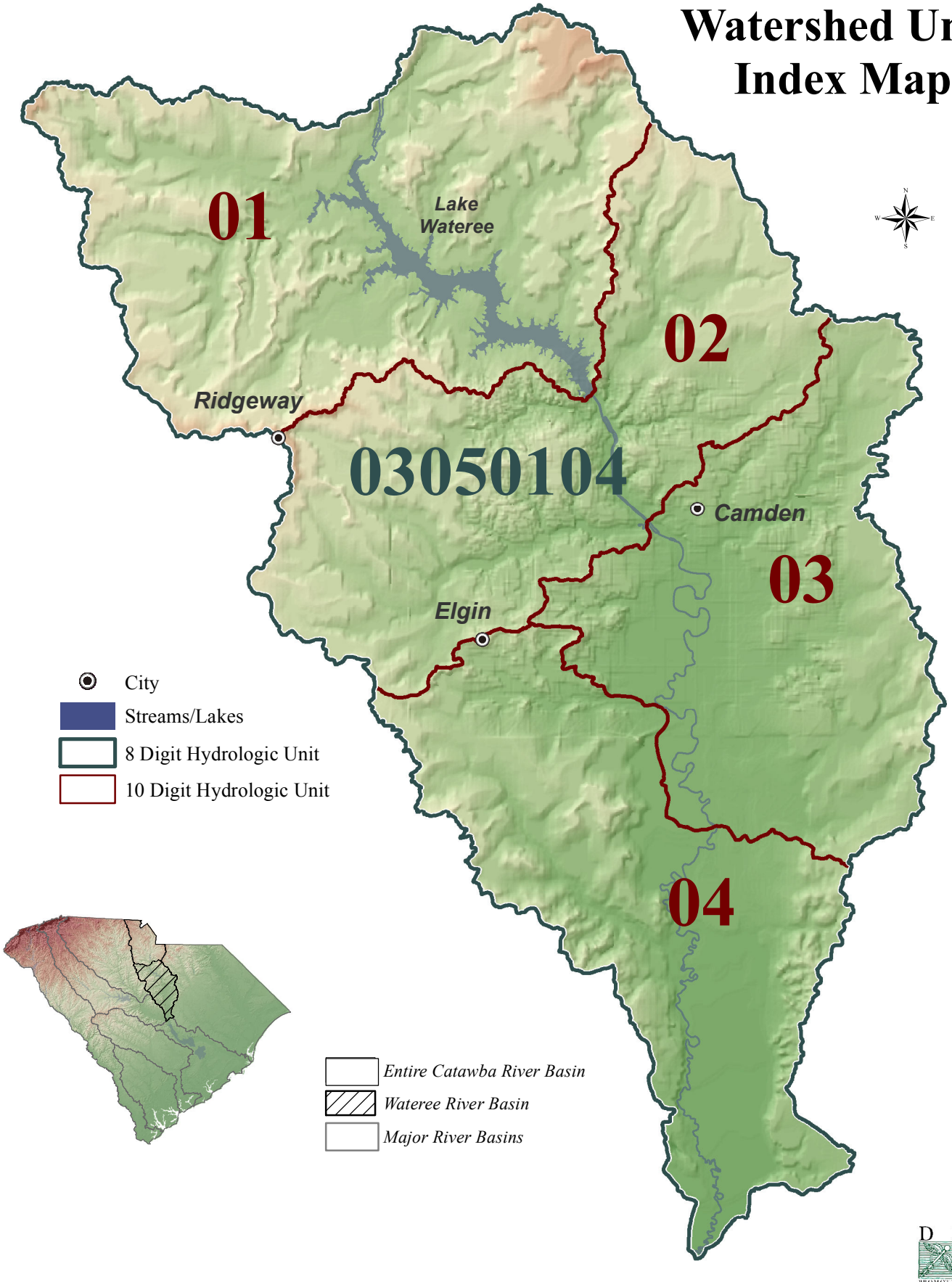
Fish Consumption Advisory

At the time of publication, a fish consumption advisory issued by SCDHEC is in effect for Lake Wateree and the Wateree River advising people to limit the amount of some types of fish consumed from these waters. Fish consumption advisories are updated annually in the spring. For background information and the most current advisories please visit www.scdhec.gov/fish. For more information or a hard copy of the advisories, call SCDHEC's Fish Consumption Advisory toll-free hotline at (888) 849-7241.

Climate

Normal yearly rainfall in the Wateree River area during the period of 1971 to 2000 was 45.4 inches, according to South Carolina's **30-year** climatological record. Data compiled from National Weather Service stations in Camden, Wateree Dam, Winnsboro, Wedgefield, and Sandhills were used to determine the general climate information for the Wateree River area. The highest seasonal rainfall occurred in the summer with 13.4 inches; 10.0, 11.2, and 10.4 inches of rain fell in the fall, winter, and spring, respectively. The average annual daily temperature was 61.5°F. Summer temperatures averaged 77.8 °F, and fall, winter, and spring mean temperatures were 62.5 °F, 44.5 °F, and 61.1 °F, respectively.

Wateree River Basin Watershed Unit Index Map



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03050104-01

(Wateree River/Lake Wateree)

General Description

Watershed 03050104-01 (formerly 03050104-010, 020) is located in Fairfield, Lancaster, and Kershaw Counties and consists primarily of the ***Wateree River*** and its tributaries from Big Wateree Creek to the Lake Wateree dam. The watershed occupies 246,371 acres of the Piedmont region of South Carolina. Land use/land cover in the watershed includes: 78.1% forested land, 10.6% agricultural land, 5.1% water, 3.3% urban land, 2.0% forested wetland (swamp), and 0.9% barren land.

The Catawba River flows out of the Cedar Creek Dam and is joined by Cedar Creek (Bell Branch, Rocky Creek, Gar Creek), McDowell Creek, Crooked Creek, and Big Wateree Creek (Wall Creek, Willow Swamp Branch, Gaydens Creek, Scabber Branch, Hogfork Branch, Little Wateree Creek). The confluence with Big Wateree Creek forms the headwaters of the Wateree River and Lake Wateree. Duke Power Company oversees operation of Lake Wateree, which is used for power generation, water supply, and recreational purposes. Little Wateree Creek originates near the Town of Winnsboro and accepts drainage from Horse Creek, McCulley Creek, Ready Creek, Minton Creek (White Oak Branch), and Horse Branch before flowing into the Big Wateree Creek arm of Lake Wateree. Langley Branch enters the lake just downstream of the confluence, followed by Taylor Creek, Dutchmans Creek (Cedar Fork, Lots Fork), and Singleton Creek (McDow Creek, Rocky Branch). Moving downlake, the lake accepts drainage from Rochelle Creek, June Creek, Fox Creek, Beaver Creek (Tranham Creek, Showerbath Branch, Little Beaver Creek), Stillhouse Branch, Colonel Creek, and White Oak Creek. Lake Wateree State Park, located near Dutchmans Creek, is another natural resource in the area. There are a total of 971.7 stream miles and 12,085.2 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CW-231	W/INT	FW	LAKE WATEREE HEADWATERS, 50 YDS DS OF CEDAR CREEK CONFLUENCE
CW-040	S/W	FW	LITTLE WATEREE CREEK AT S-20-41 5 MI E OF WINNSBORO
CW-072	W/INT	FW	BIG WATEREE CREEK AT US 21
CW-692	BIO	FW	DUTCHMANS CREEK AT S-20-21
CW-208	P/W	FW	LAKE WATEREE AT S-20-101, 11 MI ENE OF WINNSBORO
RL-08035	RL08	FW	LAKE WATEREE, DUTCHMANS CREEK ARM, 0.4 MI E OF S-20-101 BRIDGE
RS-07059	RS-07/BIO	FW	TRANHAM CREEK AT S-29-763, 6.5MI WSW OF KERSHAW
CW-076	BIO	FW	BEAVER CREEK AT S-28-13
CW-207	P/W	FW	LAKE WATEREE AT END OF S-20-291
CW-209	P/W	FW	LAKE WATEREE AT SMALL ISLAND 2.3 MI N OF DAM
CL-089	INT	FW	LAKE WATEREE IN FOREBAY EQUIDISTANT FROM DAM & SHORELINES

Lake Wateree – There are six SCDHEC monitoring sites along Lake Wateree and recreational uses are fully supported at all sites. At the furthest upstream site, ***CW-231***, aquatic life uses are not supported due to total phosphorus excursions. In addition, there are significant increasing trends in five-day biochemical oxygen demand and total nitrogen concentration, and significant decreasing trends in dissolved oxygen concentration. Although dissolved oxygen excursions occurred at this site, they were typical of values seen in lake systems and were considered natural, not standards violations. Significant decreasing trends in turbidity, total phosphorus concentration, and total suspended solids suggest improving conditions for these parameters at this site. Moving downstream to ***CW-208***, aquatic life uses are partially supported due to pH excursions. There is a significant increasing trend in pH. Significant increasing trends in dissolved oxygen concentration and decreasing trends in turbidity and total phosphorus concentration suggest improving conditions for these parameters at this site. Continuing downstream to ***RL-08035***, aquatic life uses are not supported due to total phosphorus and pH excursions.

At ***CW-207***, aquatic life uses are fully supported and significant decreasing trends in turbidity, total phosphorus concentration, total nitrogen concentration, and fecal coliform bacteria concentration suggest improving conditions for these parameters at this site. There is a significant increasing trend in pH at this site. At ***CW-209***, aquatic life uses are partially supported due to pH excursions. There is a significant increasing trend in pH at this site. Significant decreasing trends in turbidity, total phosphorus concentration, total nitrogen concentration, total suspended solids, and fecal coliform bacteria concentration suggest improving conditions for these parameters at this site. At the furthest downstream site, ***CL-089***, aquatic life uses are partially supported due to dissolved oxygen and pH excursions. In addition, there is a significant increasing trend in five-day biochemical oxygen demand. Significant decreasing trends total phosphorus concentration and total nitrogen concentration suggest improving conditions for these parameters at this site.

Little Wateree Creek (CW-040) - Aquatic life uses are not supported due to occurrences of zinc in excess of the aquatic life criterion. In addition, there is a significant increasing trend in total phosphorus concentration. There is a significant increasing trend in pH. A significant decreasing trend in turbidity suggests improving conditions for this parameter. Recreational uses are fully supported.

Big Wateree Creek (CW-072) – Aquatic life uses are partially supported due to dissolved oxygen excursions. In addition, there is a significant increasing trend in five-day biochemical oxygen demand. There is a significant decreasing trend in pH. Recreational uses are not supported; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Dutchmans Creek (CW-692) – Although macroinvertebrate communities appeared to be impacted at this site, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year.

Tranham Creek (RS-07059) - Although macroinvertebrate communities appeared to be impacted at this site, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Beaver Creek (CW-076) - Although macroinvertebrate communities appeared to be impacted at this site, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year.

*A fish consumption advisory has been issued by the Department for PCBs and includes Lake Wateree within this watershed (see advisory p.*91*).*

Natural Swimming Areas

FACILITY NAME / ***RECEIVING STREAM***	***PERMIT #*** / ***STATUS***
WHITE OAK CONFERENCE CENTER	20-1002N
GAYDENS CREEK	ACTIVE

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-059	GB	PIEDMONT BEDROCK	LAKE WATEREE STATE PARK

NPDES Permitted Activities

Active NPDES Facilities

RECEIVING STREAM / ***FACILITY NAME***	***NPDES#*** / ***TYPE***
LAKE WATEREE	SC0033651
NOSOCA PINES RANCH	MINOR DOMESTIC
LAKE WATEREE	SC0044440
US AIR FORCE/WATEREE RECREATION	MINOR INDUSTRIAL
BIG WATEREE CREEK	SC0035980
WHITE OAK CONFERENCE CENTER	MINOR DOMESTIC
BEAVER CREEK TRIBUTARY	SCG730215
GEORGIA STONE IND., INC./KERSHAW QUARRY	MINOR INDUSTRIAL

Nonpoint Source Permitted Activities

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
FAIRFIELD COUNTY CARLISLE PIT	0336-39 SAND
NEW ENGLAND STONE IND., INC. KERSHAW MINE	0556-55 GRANITE
CAROLINA QUARRIES CONGAREE QUARRY	0405-57 GRANITE

Water Quantity

WATER USER *STREAM*	*REGULATED CAP. (MGD)* *PUMPING CAPACITY (MGD)*
LUGOFF-ELGIN WATER AUTHORITY LAKE WATEREE	12.6 18.6
CITY OF CAMDEN LAKE WATEREE	9.0 12.0

Growth Potential

There is a moderate potential for continued residential and commercial development adjacent to Lake Wateree and the Town of Winnsboro. Public water is available along S.C. Hwy 34, which runs between the Towns of Winnsboro and Ridgeway, and plans are being developed to extend public sewer along this corridor. There is a low potential for growth in the rural portions of the watershed. I-77 and S.C. Hwy 200 cross in the watershed and some commercial/industrial growth has occurred around the intersection. Water and sewer service is available along S.C. Hwy 200 from the Town of Winnsboro to I-77. Another area of minor growth is the Blackstock area north of Winnsboro on U.S. Hwy 321.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

A TMDL was developed by SCDHEC and approved by EPA for ***Big Wateree Creek*** (CW-072) for violations of the fecal coliform bacteria and turbidity standards. The primary sources of fecal coliform to the stream were runoff from agricultural activities, cattle-in-stream, and failing septic systems. The TMDL states that an 80% reduction in fecal coliform loading from agricultural sources is necessary for the stream to meet the recreational use standard. The probable sources of turbidity in the stream are the resuspension of sediment in the streambed and bank erosion. Because turbidity is not a concentration and therefore cannot be expressed as a load, total suspended solids (TSS) was used as a surrogate. The TMDL states that a 70% reduction in TSS loading is necessary for the stream to meet the aquatic life use standard. Implementation of the Big Wateree Creek fecal

coliform TMDL should bring about the reductions necessary to improve water quality for turbidity also. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

Special Projects

TMDL Implementation for Fecal Coliform and Turbidity in the Big Wateree Creek Watershed

The targeted area in the Big Wateree Creek Watershed involves the waters above sampling station CW-072, and has been documented by SCDHEC as violating the water quality standard for fecal coliform bacteria and turbidity. Total Maximum Daily Loads (TMDLs) have since been developed and approved for this area for both parameters of concern. Based on guidelines set by SCDHEC, the objective of this project is to lower fecal coliform and turbidity loading, attainable within the allotted 319 funding, by 80% and 70%, respectively, so that water quality standards are attained. The project will work to obtain this goal by educating local landowners about sources of fecal coliform and turbidity loading and implementing Best Management Practices (BMPs) within the area of concern.

NPS Assessment and TMDL Development for Nutrients in the Catawba River Basin

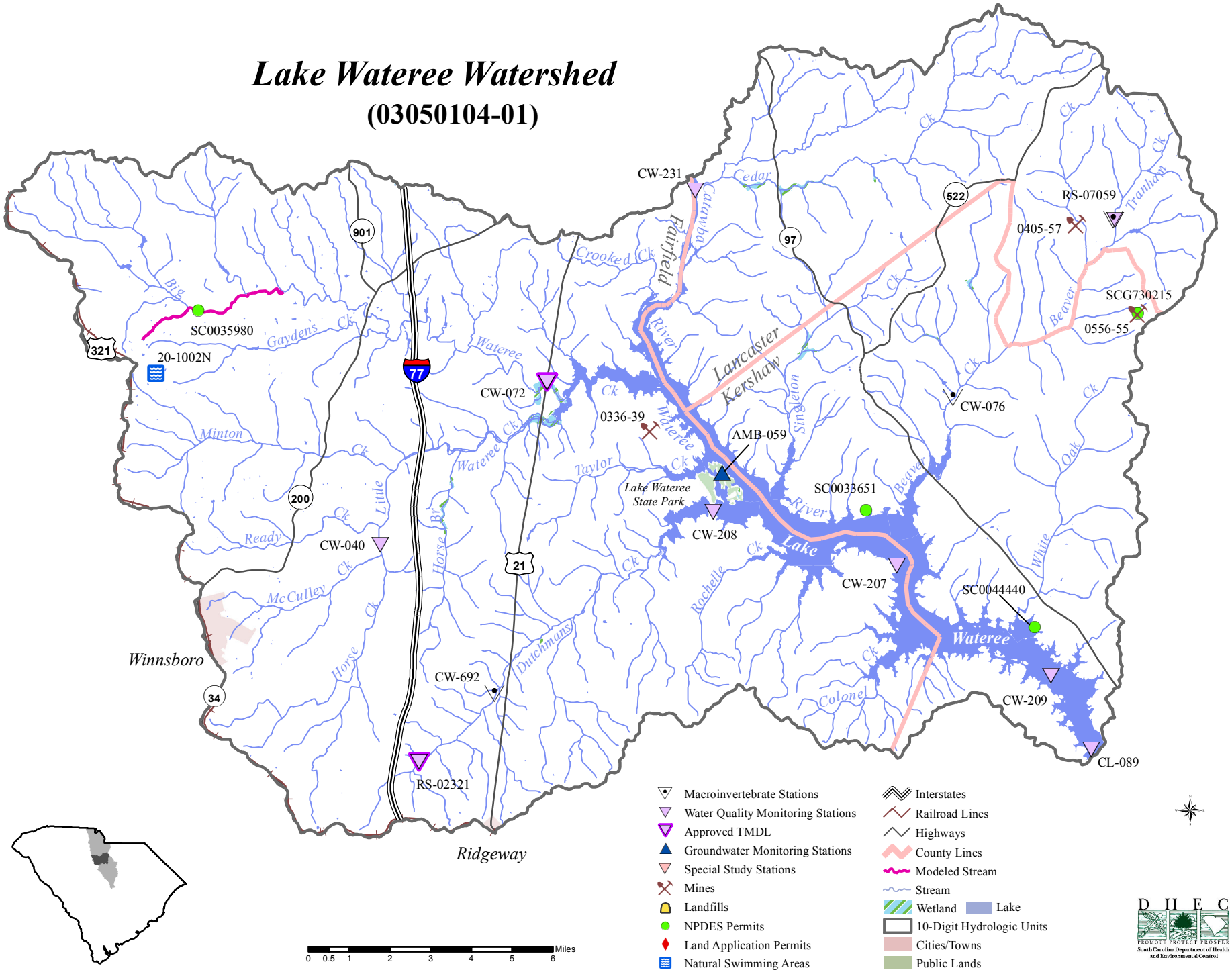
SCDHEC continues to address nutrient loading concerns in the impaired reservoirs (Fishing Creek, Great Falls, and Cedar Creek Reservoirs and Lake Wateree) of the lower Catawba-Wateree Basin using the WARMF (Watershed Analysis Risk Management Framework) water quality model. This watershed model was updated previously through 2005, but changes in phosphorus loading, land use, and population made the model out dated in terms of the model time period. Significant changes in the watershed since 2005 include new phosphorus limits on the three Charlotte-Mecklenburg WWTPs in the Sugar Creek watershed, closing of two major industrial dischargers in the South Carolina portion of the basin, and a significant increase in population and developed land use in the Charlotte – Rock Hill area. In late 2012 SCDHEC began an update of the model that will incorporate these changes in the watershed and make the model as current as feasible. SCDHEC intends to use the updated model for nutrients and pH TMDLs by determining new Wasteload Allocations for point source dischargers and Municipal Separate Storm Sewer Systems (MS4s) and Load Allocations for the nonpoint sources within the Basin.

Catawba River Water Supply Project Expansion

The Catawba River Water Supply Project (CRWSP) is a joint venture between Lancaster County in South Carolina and Union County in North Carolina, which provides drinking water to the majority of both counties. To better manage water supplies during drought conditions, the CRWSP plans to expand its off-river reservoir to provide additional storage and less reliance on Catawba River flows.

Kershaw County Manure Composting Demonstration Project

At the time of publication, Kershaw County has nearly completed a nonpoint source pollution demonstration project designed to address the fecal coliform issues in Kershaw County. The pilot program seeks to demonstrate that composting horse manure can be an easy and effective solution to fecal coliform contamination of surface waters. The end result will be a sustainable BMP technique to reduce microbial contaminant transport to surface waters in Kershaw County that can be transferred elsewhere in the County and in South Carolina.


Lake Wateree Watershed
(03050104-01)
CW-231
RS-07059
0405-57
SCG730215
0556-55
CW-076
SC0035980
20-1002N
CW-072
0336-39
AMB-059
SC0033651
CW-208
CW-040
CW-207
SC0044440
CW-209
CL-089
CW-692
RS-02321
Winnsboro
Ridgeway
Lake Wateree State Park
Lake Wateree
Wateree River
Lancaster
Kershaw
Fairfield
Crooked Ck
Cedar Ck
Tranham Ck
Beaver Ck
Oak Ck
White Oak Ck
Singleton Ck
Taylor Ck
Rachelle Ck
Colonel Ck
Dutchmans Ck
Horse Ck
McCulley Ck
Ready Ck
Little Horse Br
Minton Ck
Gaydens Ck
Big Ck
901
321
77
97
522
200
21
34
Macroinvertebrate Stations
Water Quality Monitoring Stations
Approved TMDL
Groundwater Monitoring Stations
Special Study Stations
Mines
Landfills
NPDES Permits
Land Application Permits
Natural Swimming Areas
Interstates
Railroad Lines
Highways
County Lines
Modeled Stream
Stream
Wetland
Lake
10-Digit Hydrologic Units
Cities/Towns
Public Lands
0 0.5 1 2 3 4 5 6 Miles
D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

03050104-02

(Wateree River)

General Description

Watershed 03050104-02 (formerly a portion of 03050104-030, and 040, 050, 060) is located in Kershaw, Lancaster, Fairfield, and Richland Counties and consists primarily of the ***Wateree River*** and its tributaries from the Lake Wateree dam to Twentyfive Mile Creek. The watershed occupies 202,806 acres of the Piedmont, Sandhills, and Upper Coastal Plain regions of South Carolina. Land use/land cover in the watershed includes: 62.9% forested land, 19.7% agricultural land, 10.2% urban land, 5.3% forested wetland (swamp), 0.9% barren land, 0.9% water, and 0.1% nonforested wetland (marsh).

The Wateree River flows out of the Lake Wateree dam and accepts drainage from Grannies Quarter Creek (Flat Rock Creek, Little Flat Rock Creek, Dry Branch), Sawneys Creek (Thorntree Creek, Bee Branch), Rocky Branch, Sanders Creek (Gum Swamp Creek), and Twentyfive Mile Creek. There are several ponds and lakes along the Sanders Creek drainage that include Vaughs Mill Pond, Colonial Lake, and Lake Shamokin. Twentyfive Mile Creek originates near the Town of Blythewood and accepts drainage from Simmons Creek, Ben Hood Branch, Round Top Branch, Rice Creek (Lake Columbia), Sandy Branch (Bridge Creek, Reedy Branch, Tuppler Branch), Rocky Branch, Flat Branch, and Bear Creek (Donnington Branch). Further downstream, Big Branch enters Twentyfive Mile Creek followed by Yankee Branch, Jim Branch (Spring Branch), Briar Branch, Dodge Branch, Horsepen Creek (Wolfpit Branch), Bell Branch (Rock Branch), Cook Run, Flat Branch, and Beaverdam Branch before draining into the Wateree River. There are a total of 749.0 stream miles and 1,261.1 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CW-077	BIO	FW	FLAT ROCK CREEK AT S-28-40
CW-078	BIO	FW	GRANNIES QUARTER CREEK AT S-28-58
CW-237	W/INT	FW	GRANNIES QUARTER CREEK AT SC 97
RS-08073	RS08	FW	UNNAMED CREEK TO SAWNEYS CREEK AT SC 34
CW-228	P/W/BIO	FW	SAWNEYS CREEK AT S-20-151
CW-079	W/INT	FW	SAWNEYS CREEK AT S-28-37
CW-710	BIO	FW	SANDERS CREEK AT SC 97
CW-229	P/W	FW	BEAR CREEK AT S-40-82
CW-080	S/INT/BIO	FW	TWENTYFIVE MILE CREEK AT S-28-05 3.7 MI W OF CAMDEN
(CW-019)	S/W	FW	WATEREE RIVER AT US 1

Flat Rock Creek (CW-077) – Aquatic life uses are fully supported based on macroinvertebrate community data.

Grannies Quarter Creek – There are two SCDHEC monitoring sites along Grannies Quarter Creek. Although macroinvertebrate communities appeared to be impacted at the upstream site ***(CW-078)***, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year. Aquatic life uses are fully supported at the downstream site ***(CW-237)***; however, there is a significant increasing trend in five-day biochemical oxygen demand. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Tributary to Sawneys Creek (RS-08073) - Aquatic life uses are fully supported. Recreational uses are not supported due to fecal coliform bacteria excursions.

Sawneys Creek - There are two SCDHEC monitoring sites along Sawneys Creek. Although macroinvertebrate communities appeared to be impacted at the upstream site ***(CW-228)***, the sample was considered to be not representative due to severe drought conditions that existed during the sampling year. Recreational uses are not supported due to fecal coliform bacteria excursions, which are compounded by a significant increasing trend in fecal coliform bacteria. Aquatic life uses are fully supported at the downstream site ***(CW-079)***; however, there is a significant increasing trend in five-day biochemical oxygen demand. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Sanders Creek (CW-710) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Bear Creek (CW-229) - Aquatic life uses are fully supported. There is a significant increasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

Twentyfive Mile Creek (CW-080) - Aquatic life uses are partially supported based on macroinvertebrate community data. In addition, there are significant increasing trends in five-day biochemical oxygen demand and decreasing trends in dissolved oxygen concentration. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Wateree River (CW-019) – Although CW-019 geographically resides in 03050104-03, the water quality reflects 03050104-02. Aquatic life uses are partially supported due to dissolved oxygen excursions. There is a significant increasing trend in pH. Significant decreasing trends in turbidity and fecal coliform bacteria suggest improving conditions for these parameters. Recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes the Wateree River within this watershed (see advisory p.91).

Natural Swimming Areas

FACILITY NAME *RECEIVING STREAM*	*PERMIT #* *STATUS*
CAMP LONGRIDGE THORNTREE CREEK TRIBUTARY	20-N01 ACTIVE

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-036	GB	MIDDENDORF	TOWN OF ELGIN

NPDES Permitted Activities

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME*	*NPDES#* *TYPE*
WATEREE RIVER KERSHAW COUNTY/LUGOFF WWTP	SC0039870 MINOR DOMESTIC
SANDERS CREEK TRIBUTARY NEW SOUTH LUMBER CO./CAMDEN PLANT	SC0047384 MINOR INDUSTRIAL
BEAR CREEK TRIBUTARY KENNECOTT RIDGEWAY FORMER GOLD MINE	SC0041378 MINOR INDUSTRIAL
LITTLE FLAT ROCK CREEK GEORGIA STONE IND., INC./KERSHAW PINK	SCG730155 MINOR INDUSTRIAL
RICE CREEK LINDE GAS LLC	SCG250219 MINOR INDUSTRIAL
RICE CREEK L DEAN WEAVER CONSTR. CO./HAGOOD MINE	SCG730394 MINOR INDUSTRIAL
GUM SWAMP CREEK CANTEY CONSTRUCTION INC./BUTTERNUT MINE	SCG730522 MINOR INDUSTRIAL
BEAR CREEK TRIBUTARY CAROLINA CERAMICS LLC/MOBLEY MINE	SCG730550 MINOR INDUSTRIAL
LITTLE FLAT ROCK CREEK WILLOW OAK QUARRY LLC/WILLOW OAK MINE	SCG731072 MINOR INDUSTRIAL

Municipal Separate Storm Sewer Systems (MS4)

RECEIVING STREAM *MUNICIPALITY* *RESPONSIBLE PARTY* *IMPLEMENTING PARTY*	*NPDES#* *MS4 PHASE* *MS4 SIZE*
WATEREE RIVER ---------- RICHLAND COUNTY RICHLAND COUNTY	SCS400001 PHASE I MEDIUM MS4

WATEREE RIVER TOWN OF ELGIN TOWN OF ELGIN KERSHAW COUNTY	SCR035501 PHASE II SMALL MS4
WATEREE RIVER UNINCORPORATED AREAS KERSHAW COUNTY KERSHAW COUNTY	SCR035502 PHASE II SMALL MS4
WATEREE RIVER UNINCORPORATED AREAS KERSHAW COUNTY KERSHAW COUNTY	SCR035502 PHASE II SMALL MS4
WATEREE RIVER UNINCORPORATED AREAS RICHLAND COUNTY RICHLAND COUNTY	SCS400001 PHASE I MEDIUM MS4

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
EI DUPONT INDUSTRIAL	283316-1601 INACTIVE
EI DUPONT INDUSTRIAL	---------- INACTIVE
KERSHAW COUNTY LUGOFF/ELGIN MUNICIPAL	---------- INACTIVE
LUGOFF/ELGIN SANITARY LANDFILL MUNICIPAL	---------- INACTIVE
BF GOODRICH (THERMOID) MUNICIPAL	--------- INACTIVE
BF GOODRICH INDUSTRIAL	--------- INACTIVE
GULLEDGE COMPOSTING SITE COMPOSTING	282443-3001 INACTIVE
TRAPP LCD & YT LANDFILL C&D	402462-1701 INACTIVE

Land Application Sites

LAND APPLICATION FACILITY NAME	*PERMIT # TYPE*
SPRAYFIELD FAIRFIELD HEALTHCARE CENTER	ND0067008 DOMESTIC
LAGOON LINDE GAS LLC/BLYTHWOOD PLANT	ND0069582 INDUSTRIAL
LAGOON HBD INDUSTRIES INC./ELGIN	ND0001546 INDUSTRIAL

Mining Activities

MINING COMPANY MINE NAME	*PERMIT # MINERAL*
CANTEY CONSTRUCTION, INC. BUTTERNUT MINE	1546-55 SAND
GEORGIA STONE IND., INC. KERSHAW PINK	0404-55 GRANITE
N.C. GRANITE CORP. PALMETTO QUARRIES #1	0487-55 GRANITE
EASTERN LAND & TIMBER INDUSTRIAL PARK MINE	0592-55 SAND
CAROLINA CERAMICS, INC. MOBLEY ROAD MINE	0403-79 SHALE
L. DEAN CONSTRUCTION CO., INC. LANGFORD	1417-79 SAND

Growth Potential

There is a high potential for residential, commercial, and industrial growth in this watershed, which contains portions of the City of Camden and the Towns of Lugoff, Elgin, and Blythwood. There is an emphasis of growth along the U.S. Hwy 1 corridor between the Cities of Columbia and Camden. Sewer is provided to this area through a regional system located in Kershaw County. The City of Camden is in the process of upgrading the WWTP to 3.0 MGD to serve the growth in the area. A large portion of the watershed is river bottomland swamp forests, which are heavily forested for timber.

Watershed Protection and Restoration Strategies

Total Maximum Daily Loads (TMDLs)

A TMDL was developed by SCDHEC and approved by EPA for ***Sawneys Creek*** water quality monitoring sites CW-228 and CW-079 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the stream were determined to be failed septic systems and cattle-in-stream. The

TMDL states that a 73-78% reduction in fecal coliform loading from these sources is necessary for the stream to meet the recreational use standard.

A TMDL was developed by SCDHEC and approved by EPA for ***Twentyfive Mile Creek*** water quality monitoring site CW-080 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the stream were determined to be failed septic systems, cattle-in-stream, and runoff from pastures and developed land. The TMDL states that a 70% reduction in fecal coliform loading from these sources is necessary for the stream to meet the recreational use standard.

A TMDL was developed by SCDHEC using the load duration methodology and approved by the EPA for ***Grannies Quarter Creek*** in Kershaw and Lancaster Counties (monitoring site CW-237). The TMDL determines the maximum amount of fecal coliform bacteria that Grannies Quarter Creek at CW-237 can receive from pollution sources and still meet water quality standards. At the time the TMDL was approved there were no permitted continuous dischargers of fecal coliform in the watershed. At that time the only non-continuous discharger in the watershed with potential to discharge fecal coliform was SC DOT. Probable potential sources of fecal coliform pollution in the watershed contributing to the impairment of Grannies Quarter Creek include livestock, failing septic systems, wildlife, and other agricultural sources. The TMDL requires a reduction of 68% in the current load to the creek to meet standards. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

Special Projects

Water Quality Model of the Upper Wateree River and Allocation of Oxygen Demand

The Kershaw County Water and Sewer Authority contracted with the U.S. Geological Survey to conduct an extensive modeling study of the upper Wateree River. Model development was completed in 1999. The study included the characterization of streamflow and water quality in the river and the development of hydrodynamic and water quality computer simulation models to determine allowable loads for oxygen demanding substances. Together, the models are designed to predict water quality, especially dissolved oxygen levels, under various streamflow and loading conditions.

The USGS model was converted to a wasteload allocation tool and the allowable oxygen demand load to the upper Wateree River determined. The new model required an overall reduction of 27% from the previously permitted load. With input from the Central Midlands Council of Governments (CMCOG) and the Santee Lynches Regional Council of Governments (SLRCOG), the available load was allocated with the CMGOG's one discharge being allocated 31% of the load and the SLRCOG's five discharges being allocated 69% of the load. The agreed upon loadings have been incorporated into NPDES permits for the individual dischargers.

COWASEE Basin Focus Area

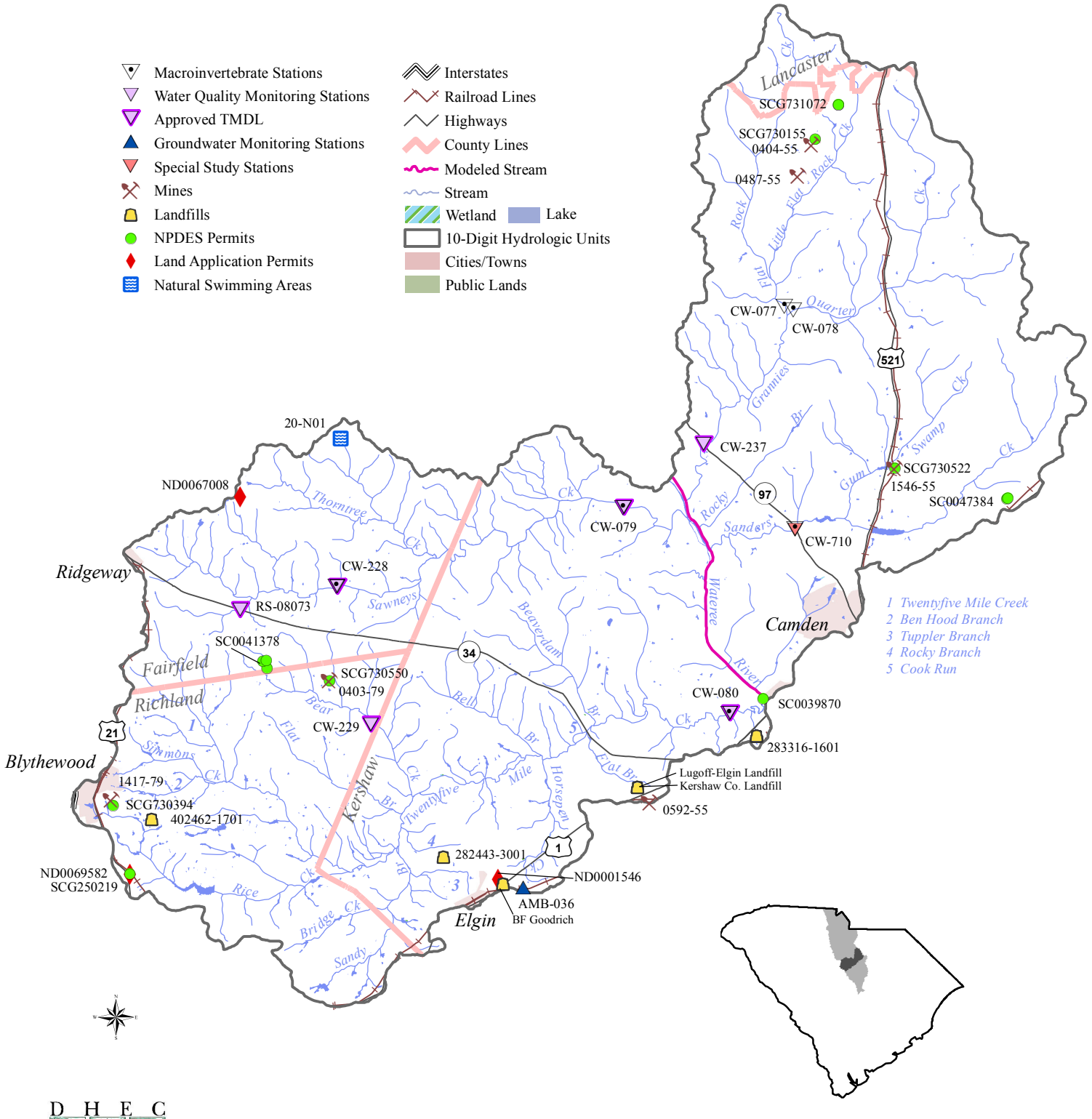
The COWASEE Basin covers over 215,000 acres in the midlands of South Carolina and includes the Congaree, Wateree and upper Santee River watersheds. Based on the ACE Basin focus area model, land trusts and other conservation organizations have come together to protect land in the COWASEE basin through land acquisition and conservation easements. The focus area is also a priority waterfowl restoration area where basin partners are implementing research and management to improve waterfowl habitat and populations. Organizations working in the COWASEE basin include the Congaree Land Trust, Ducks Unlimited, Friends of Congaree Swamp, the USDA Natural Resources Conservation Service, Richland County Conservation Commission, the South Carolina Department of Natural Resources, Sumter County Soil and Water Conservation District and The Conservation Fund.

Kershaw County Manure Composting Demonstration Project

At the time of publication, Kershaw County has nearly completed a nonpoint source pollution demonstration project designed to address the fecal coliform issues in Kershaw County. The pilot program seeks to demonstrate that composting horse manure can be an easy and effective solution to fecal coliform contamination of surface waters. The end result will be a sustainable BMP technique to reduce microbial contaminant transport to surface waters in Kershaw County that can be transferred elsewhere in the County and in South Carolina.

(Upper) Wateree River Watershed

(03050104-02)



03050104-03

(Wateree River)

General Description

Watershed 03050104-03 (formerly a portion of 03050104-030, and 070, 080) is located in Kershaw, Lee, Sumter, and Richland Counties and consists primarily of the middle section of the ***Wateree River*** and its tributaries from Twentyfive Mile Creek to Swift Creek. The watershed occupies 175,248 acres of the Sandhills and Upper Coastal Plain regions of South Carolina. Land use/land cover in the watershed includes: 39.0% forested land, 26.7% agricultural land, 24.2% forested wetland (swamp), 8.1% urban land, 1.2% water, 0.6% nonforested wetland (marsh), and 0.2% barren land.

Downstream of Twentyfive Mile Creek, the Wateree River accepts drainage from Camp Creek, Bolton Branch, Gillies Creek (Buck Creek), Big Pine Tree Creek (Llewellyn Millpond, Beaverdam Branch, Thoroughfare Branch, Hyco Branch, Berkeley Branch, Adams Mill Pond, Hermitage Mill Pond, Thomas Branch, Little Pine Tree Creek, Kendall Lake), Town Creek, Bolton Branch, Gillies Ditch (Jumping Gully), Swift Creek (Little Swift Creek, Boykins Mill Pond, White Oak Slash Lake), and Rafting Creek (Bracey Mill Creek, Little Rafting Creek). Additional natural resources in the watershed include Goodale State Park near the City of Camden. There are a total of 546.3 stream miles and 1,288.6 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CW-019	S/W	FW	WATEREE RIVER AT US 1
CW-223	S/W/BIO	FW	LITTLE PINE TREE CREEK AT S-28-132
CW-021	W/INT	FW	BIG PINE TREE CREEK AT US 521, NW OF BRIDGE
CW-082	INT	FW	SWIFT CREEK AT S-28-12
CW-238	W/INT	FW	SWIFT CREEK AT SC 261

Wateree River (CW-019) – Aquatic life uses are partially supported due to dissolved oxygen excursions. There is a significant increasing trend in pH. Significant decreasing trends in turbidity and fecal coliform bacteria suggest improving conditions for these parameters. Recreational uses are fully supported.

Little Pine Tree Creek (CW-223) – Aquatic life uses are fully supported based on macroinvertebrate community data; however, there are significant increasing trends in five-day biochemical oxygen demand and turbidity. Although pH excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Recreational uses are not supported due to fecal coliform bacteria excursions, which are compounded by significant increasing trends in fecal coliform bacteria concentration.

Big Pine Tree Creek (CW-021) - Aquatic life and recreational uses are fully supported; however, there is a significant increasing trend in five-day biochemical oxygen demand.

Swift Creek - There are two SCDHEC monitoring sites along Swift Creek and recreational uses are fully supported at both sites. Although pH excursions occurred at both sites, they were typical of values seen in such systems and were considered natural, not standards violations. At the upstream site ***(CW-082)***, aquatic life uses are partially supported due to dissolved oxygen excursions. In addition, there is a significant increasing trend in turbidity. Aquatic life uses are not supported at the downstream site ***(CW-238)***, due to dissolved oxygen excursions. In addition, there is a significant increasing trend in five-day biochemical oxygen demand. There is a significant increasing trend in pH at this site.

*A fish consumption advisory has been issued by the Department for mercury and includes the Wateree River within this watershed (see advisory p.*91*).*

Natural Swimming Areas

FACILITY NAME	***PERMIT #***
RECEIVING STREAM	***STATUS***
GOODALE STATE PARK	28-N01
GOODALE STATE PARK LAKE	ACTIVE

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-038	GB	MIDDENDORF	C. THOMPSON WATER DISTRICT
AMB-019	GB	BLACK CREEK	WATEREE CORRECTIONAL INST.

NPDES Permitted Activities

Active NPDES Facilities

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
WATEREE RIVER	SC0002585
INVISTA S.A.R.L./CAMDEN	MAJOR INDUSTRIAL
WATEREE RIVER	SC0021032
CITY OF CAMDEN WWTP	MAJOR DOMESTIC
WATEREE RIVER	SC0002682
WEYLCHEM US INC.	MAJOR INDUSTRIAL
WATEREE RIVER	SC0043451
PALMETTO UTILITIES INC./SPEARS CREEK WWTF	MINOR DOMESTIC
BIG PINE TREE CREEK	SC0002518
DEROYAL TEXTILES INC.	MAJOR INDUSTRIAL

LITTLE PINE TREE CREEK KENDALL CO./WATEREE PLANT	SCG250049 MINOR INDUSTRIAL
GILLIES CREEK TB KAWASHIMA USA, INC./LUGOFF	SCG250279 MINOR INDUSTRIAL
GILLIES CREEK UNIMIN CORP./LUGOFF PLANT	SCG730382 MINOR INDUSTRIAL
GILLIES CREEK COGSDILL TOOL PRODUCTS INC.	SC0037575 MINOR INDUSTRIAL
GILLIES CREEK EASTERN LAND & TIMBER/INDUSTRIAL PARK MINE	SCG730188 MINOR INDUSTRIAL
WATEREE RIVER SC DEPT. CORRECTIONS/WATEREE RIVER PLANT	SC0045349 MINOR DOMESTIC
LITTLE RAFTING CREEK SCENIC LAKE PARK	SC0031895 MINOR DOMESTIC
GILLIES CREEK C RAY MILES CONTRUCTION CO., INC./TURTLE CREEK	SCG730605 MINOR INDUSTRIAL
WATEREE RIVER TRIBUTARY LUGOFF SAND CO.	SCG730606 MINOR INDUSTRIAL
BIG PINE TREE CREEK CALLAHAN GRADING LLC/1401 CHERAW ROAD MINE	SCG731164 MINOR INDUSTRIAL

Municipal Separate Storm Sewer Systems (MS4)

RECEIVING STREAM ***MUNICIPALITY*** ***RESPONSIBLE PARTY*** ***IMPLEMENTING PARTY***	***NPDES#*** ***MS4 PHASE*** ***MS4 SIZE***
WATEREE RIVER ---------- RICHLAND COUNTY RICHLAND COUNTY	SCS400001 PHASE I MEDIUM MS4

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
KERSHAW COUNTY C&D LANDFILL C&D	281001-1201 ACTIVE
KERSHAW COUNTY YARD WASTE COMPOSTING COMPOSTING	281001-3001 ACTIVE

KERSHAW COUNTY SANITARY LANDFILL MUNICIPAL	281001-1101 INACTIVE
KERSHAW COUNTY SANITARY LANDFILL MUNICIPAL	---------- INACTIVE
KERSHAW COUNTY SANITARY LANDFILL MUNICIPAL	---------- INACTIVE
OLD KERSHAW LANDFILL (DUMP) ----------	-------- CLOSED
TOWN OF KERSHAW MUNICIPAL	---------- INACTIVE
KENDALL CO. PLANT LANDFILL INDUSTRIAL	---------- INACTIVE
KENDALL CO. PLANT LANDFILL INDUSTRIAL	---------- INACTIVE
CANTEY LAND CLEARING LANDFILL C&D	282618-1701 INACTIVE
FAIR STREET DUMP MUNICIPAL	---------- INACTIVE
DICEY CREEK DUMP MUNICIPAL	---------- INACTIVE
WATEREE CORRECTIONAL INST. MUNICIPAL	---------- INACTIVE

Land Application Sites

LAND APPLICATION FACILITY NAME	***PERMIT # TYPE***
SPRAYFIELD ROLLING MEADOWS/HERMITAGE FINANCIAL	ND0069868 DOMESTIC
SPRAYFIELD SMITHS MHP	ND0061735 DOMESTIC
RAPID INFILTRATION BASIN PRAXAIR, INC./LINDE DIV.	ND0069655 INDUSTRIAL
SLUDGE APPLICATION DEROYAL TEXTILES INC.	ND0075272 INDUSTRIAL

Mining Activities

MINING COMPANY MINE NAME	***PERMIT # MINERAL***
LUGOFF SAND COMPANY LUGOFF SAND MINE	0121-55 SAND

PALMETTO BRICK COMPANY	0995-55
HINES MINE	KAOLI
JOSEPH K. MCCASKILL	1298-55
MCCASKILL MINE	SAND

Water Quantity

WATER USER	***REGULATED CAP.(MGD)***
STREAM	***PUMPING CAPACITY (MGD)***
INVISTA	6.0
WATEREE RIVER	9.0

Growth Potential

There is a high potential for continued residential, commercial, and industrial development in this watershed, which contains portions of the City of Camden and the Towns of Lugoff, Stateburg, Wedgewood, and Rembert and is adjacent to Shaw Air Force Base. U.S. Hwy 1 and U.S.Hwy 521, together with I-20 provide the growth corridors. The interchange of I-20 and U.S. Hwy 521 has a particularly high development potential. Sewer is provided to this area through a regional system located in Kershaw County. The City of Camden is in the process of upgrading the WWTP to 3.0 MGD to serve the growth in the area. A large portion of the watershed is river bottomland swamp forests, which are heavily forested for timber.

Watershed Protection and Restoration

Special Projects

Water Quality Model of the Upper Wateree River and Allocation of Oxygen Demand

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The USGS model was converted to a wasteload allocation tool and the allowable oxygen demand load to the upper Wateree River determined. The new model required an overall reduction of 27% from the previously permitted load. With input from the Central Midlands Council of Governments (CMCOG) and the Santee Lynches Regional Council of Governments (SLRCOG), the available load was allocated with the CMGOG's one discharge being allocated 31% of the load and the SLRCOG's five discharges being allocated 69% of the load. The agreed upon loadings have been incorporated into NPDES permits for the individual dischargers.

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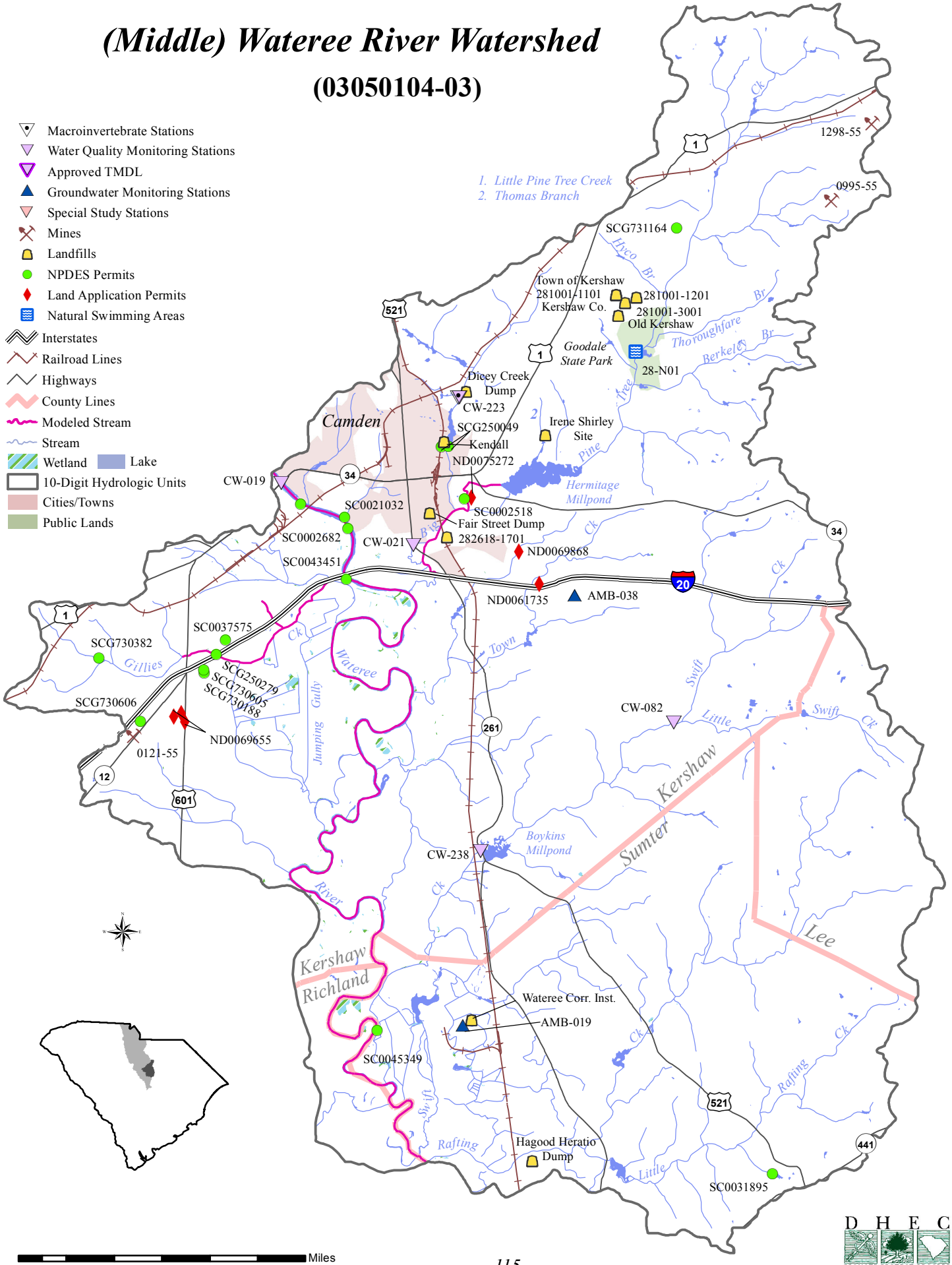
(Middle) Wateree River Watershed

(03050104-03)



D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

03050104-04

(Wateree River)

General Description

Watershed 03050104-04 (formerly a portion of 03050104-030, and 090, 100) is located in Sumter and Richland Counties and consists primarily of the lowest portion of the ***Wateree River*** and its tributaries from Swift Creek to its confluence with the Congaree River Basin. The watershed occupies 179,948 acres of the Piedmont, Sandhills, and Upper Coastal Plain regions of South Carolina. Land use/land cover in the watershed includes: 36.5% forested land, 36.0% forested wetland (swamp), 18.2% agricultural land, 6.3% urban land, 1.4% nonforested wetland (marsh), 1.2% water, and 0.4% barren land.

Downstream of Swift Creek, the Wateree River receives drainage from Spears Creek. Spears Creek originates near the Town of Elgin and flows through several small lakes before accepting the drainage of Sloan Branch, Kelly Creek (White Pond), Haig Creek, McCaskill Creek (Runander Branch, Otterslide Branch), Raglins Creek, Madraw Branch, and Moke Branch. The river then accepts drainage from Pigeon Roost Branch, Gum Swamp Branch (Robert Branch, Big Lake, Little Lake, Dry Swamp Lake), and Colonels Creek (Buffalo Creek, Bee Branch, Jumping Run Creek, Leesburg Branch, Murray Pond, Goodwill Pond). The Wateree River then accepts drainage from Kohler Old River (Green Lake), Sandy Creek (Halfway Creek), and the Little River. Beech Creek (Campell Creek, Shanks Creek) merges with Sandy Creek to form the Little River. Wateree Swamp extends across the lower portion of the watershed. Additional natural resources include the Manchester State Forest and Poinsett State Park located in the lower portion of the watershed. Poinsett State Park Lake is located on Shanks Creek. There are a total of 461.9 stream miles and 1,311.8 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CW-154	S/W/BIO	FW	KELLY CREEK AT S-28-367 2.9 MI SE OF ELGIN
CW-155	P/W/BIO	FW	SPEARS CREEK AT SC 12 3.6 MI SE OF ELGIN
CW-166	W/INT	FW	SPEARS CREEK AT US 601
CW-250	INT	FW	COLONELS CREEK AT SC 262
CW-240	W	FW	COLONELS CREEK AT US 601
CW-206	P/SPRP	FW	WATEREE RIVER AT US 76 & 378
CW-222/SC-002	P/INT	FW	WATEREE RIVER 1.6 MI UPSTREAM OF CONFL. WITH CONGAREE RIVER

Kelly Creek (CW-154) – Aquatic life uses are fully supported based on macroinvertebrate community data; however, there is a significant increasing trend in five-day biochemical oxygen demand. Although pH excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Recreational uses are fully supported.

Spears Creek – There are two SCDHEC monitoring sites along Spears Creek. Although pH excursions occurred at both sites, they were typical of values seen in such systems and were considered natural, not standards violations. At the upstream site ***(CW-155)***, aquatic life uses are fully supported based on macroinvertebrate community data; however, there is a significant increasing trend in five-day biochemical oxygen demand. Recreational uses are partially supported due to fecal coliform bacteria excursions, which are compounded by a significant increasing trend in fecal coliform bacteria. At the downstream site ***(CW-166),*** aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and total nitrogen concentration. There is a significant increasing trend in pH at this site. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Colonels Creek – There are two SCDHEC monitoring sites along Colonels Creek and recreational uses are fully supported at both sites. Although pH excursions occurred at both sites, they were typical of values seen in such systems and were considered natural, not standards violations. At the upstream site ***(CW-250)***, aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and total phosphorus concentration. There is a significant decreasing trend in pH at this site. At the downstream site ***(CW-240),*** aquatic life uses are again fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand and decreasing trends in dissolved oxygen concentration.

Wateree River - There are two SCDHEC monitoring sites ***(CW-206, CW-222)*** and one South Carolina Public Service Authority (SCPSA) monitoring site ***(SC-002)*** along this portion of the Wateree River. Aquatic life and recreational uses are fully supported at the upstream site ***(CW-206)*** and significant increasing trends in dissolved oxygen concentration and decreasing trends in turbidity, total phosphorus and total nitrogen concentration, and total suspended solids suggest improving conditions for these parameters. Aquatic life and recreational uses are also fully supported at the downstream site ***(CW-222/SC-002)***; however, there is a significant increasing trend in five-day biochemical oxygen demand. There is a significant increasing trend in pH at this site. Significant decreasing trends in total phosphorus concentration, total suspended solids, and fecal coliform bacteria concentration suggest improving conditions for these parameters.

*A fish consumption advisory has been issued by the Department for mercury and includes the Wateree River within this watershed (see advisory p.*91*).*

Natural Swimming Areas

FACILITY NAME	***PERMIT #***
RECEIVING STREAM	***STATUS***
POINSETT STATE PARK	43-N01
POINSETT STATE PARK LAKE	ACTIVE

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-018	GB	BLACK CREEK	OAKLAND PLANTATION
AMB-048	GB	MIDDENDORF	NORTH OF EASTOVER

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
WATEREE RIVER SCE&G/WATEREE STATION	SC0002038 MAJOR INDUSTRIAL
WATEREE RIVER INTERNATIONAL PAPER/EASTOVER (UNION CAMP)	SC0038121 MAJOR INDUSTRIAL
WATEREE RIVER FINNCHEM USA, INC.	SC0047902 MINOR INDUSTRIAL
WATEREE RIVER RICHLAND COUNTY/EASTOVER REG. WWTP	SC0047911 MINOR DOMESTIC
WATEREE RIVER CITY OF SUMTER	SC0027707 MAJOR DOMESTIC
BEECH CREEK US AIR FORCE/SHAW AFB	SC0024970 MINOR INDUSTRIAL
BEECH CREEK CWS/OAKLAND PLANTATION SD	SC0030678 MINOR DOMESTIC
BEECH CREEK TRIBUTARY SOUTH FORGE APTS	SC0033235 MINOR DOMESTIC
SPEARS CREEK TRIBUTARY KROGER CO./PONTIAC FOODS	SCG250053 MINOR INDUSTRIAL
SLOAN BRANCH LOVELESS & LOVELESS, INC.	SCG730047 MINOR INDUSTRIAL
COLONELS CREEK - DITCH SC NATL GUARD/MCCRADY TRAINING FAC.	SC0046108 MINOR INDUSTRIAL
COLONELS CREEK C RAY MILES CONSTRUCTION/PERCIVAL ROAD	SCG730373 MINOR INDUSTRIAL
OTTERSLIDE BRANCH CAROLINA CERAMICS/DRY BRANCH MINE	SCG730439 MINOR INDUSTRIAL
SLOAN BRANCH RB COX TRUST/YEA YEA MINE	SCG730464 MINOR INDUSTRIAL

MCCASKILL CREEK	SCG730510
HANSON BRICK EAST/GADSON	MINOR INDUSTRIAL
OTTERSLIDE BRANCH	SCG730551
CAROLINA CERAMICS/KOON MINE	MINOR INDUSTRIAL
GUM SWAMP BRANCH	SCG730575
HANSON AGGREGATES SE/HASSKEMP MINE	MINOR INDUSTRIAL
SPEARS CREEK	SCG730608
MILDRED PORTER/PORTER PIT	MINOR INDUSTRIAL
SLOAN BRANCH	SCG730702
HARDAWAY CONSTRUCTION/NE MINE	MINOR INDUSTRIAL

Municipal Separate Storm Sewer Systems (MS4)

RECEIVING STREAM	***NPDES#***
MUNICIPALITY	***MS4 PHASE***
RESPONSIBLE PARTY	***MS4 SIZE***
IMPLEMENTING PARTY	
WATEREE RIVER	SCS400001
----------	PHASE I
RICHLAND COUNTY	MEDIUM MS4
RICHLAND COUNTY	
WATEREE RIVER	SCR035501
ELGIN	PHASE II
ELGIN	SMALL MS4
KERSHAW COUNTY	
WATEREE RIVER	SCR035502
UNINCORPORATED AREAS	PHASE II
KERSHAW COUNTY	SMALL MS4
KERSHAW COUNTY	
WATEREE RIVER	SCR035502
UNINCORPORATED AREAS	PHASE II
KERSHAW COUNTY	SMALL MS4
KERSHAW COUNTY	
WATEREE RIVER	SCS400001
UNINCORPORATED AREAS	PHASE I
RICHLAND COUNTY	MEDIUM MS4
RICHLAND COUNTY	
WATEREE RIVER	SCR038501
SUMTER	PHASE II
SHAW AFB	SMALL MS4
SHAW AFB	
WATEREE RIVER	SCR038503
UNINCORPORATED AREAS	PHASE II
SUMTER COUNTY	SMALL MS4
SUMTER COUNTY	

Nonpoint Source Permitted Activities

Land Disposal Activities

Landfill Facilities

LANDFILL NAME *FACILITY TYPE*	*PERMIT#* *STATUS*
INTERNATIONAL PAPER/EASTOVER INDUSTRIAL	403313-1601 ACTIVE
PLOWDEN C&D DUMP C&D	--------- INACTIVE
SCREAMING EAGLE ROAD YARD TRASH LF MUNICIPAL	---------- INACTIVE
SCREAMING EAGLE ROAD LANDFILL COMPOSTING	402400-3001 INACTIVE
SCREAMING EAGLE ROAD LANDFILL MUNICIPAL	---------- INACTIVE
CLEMSON ROAD DUMP MUNICIPAL	--------- INACTIVE
CLEMSON ROAD DUMP MUNICIPAL	--------- INACTIVE
CAROLINA CONTAINER NORTHEAST LANDFILL MUNICIPAL	403323-1101 INACTIVE
LOVELESS & LOVELESS, INC. C&D	282428-1201 ACTIVE
LOVELESS & LOVELESS, INC. COMPOSTING FACILITY COMPOSTING	282428-3001 INACTIVE
LOVELESS & LOVELESS SCREAMING EAGLE RD LF C&D	402428-1701 ACTIVE
PINE HILL C&D LANDFILL C&D	282401-1201 ACTIVE
TNT SANDS LLC & LT LANDFILL C&D	402423-1201 INACTIVE
CAROLINA GRADING INC. INDUSTRIAL	402446-1601 ACTIVE
NORTHEAST LANDFILL, LLC MUNICIPAL	402434-1101 ACTIVE
RICHLAND LANDFILL, INC. MUNICIPAL	402401-1101 ACTIVE

YANDLE GARBAGE SERVICES INC. INDUSTRIAL	---------- INACTIVE
YANDLE SANITARY LANDFILL MUNICIPAL	---------- INACTIVE

Land Application Sites

LAND APPLICATION SYSTEM ***FACILITY NAME***	***ND#*** ***TYPE***
INFILTRATION BASIN PALMETTO UTILITIES, INC. REG. WWTP	ND0068411 DOMESTIC
TILE FIELD HACIENDA MOBILE HOME ESTATES	ND0067598 DOMESTIC

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
HANSEN AGGREGATES HARRY HASSKAMP MINE	0582-85 SAND/GRAVEL
CAROLINA CERAMICS, INC. KOON CLAY MINE	0137-55 KAOLIN
UNIMIN CORP. BLANEY PLANT	0089-55 SAND
TAYLOR CLAY PRODUCTS CO. TAYLOR MINE	0830-55 KAOLIN
HANSON BRICK COLUMBIA GADSON PIT	0409-55 KAOLIN
LOVELESS & LOVELESS, INC. SCREAMING EAGLE ROAD PIT	0492-55 SAND
HARDAWAY CONCRETE COMPANY, INC. NORTHEAST MINE	0507-79 SAND
CHAMBERS RICHLAND CO. LANDFILL, INC. SCREAMING EAGLE ROAD MINE	0700-79 KAOLIN
TNT SAND TNT SAND MINE	0898-79 SAND
MILDRED R. PORTER PORTER'S PIT	1115-55 SAND; SAND/CLAY
TURTLE CREEK FARM MILES MINING OF LUGOFF	1239-55 KAOLIN
RB COX TRUST YEA YEA MINE	1276-79 SAND/SANDCLAY

C. RAY CONSTRUCTION CO., INC. PERCIVAL ROAD MINE	1370-79 SAND
CAROLINA CERAMICS DRY BRANCH MINE	1432-55 KAOLIN

Growth Potential

There is a moderate to high potential for residential, commercial, and industrial growth in this watershed, which contains a portion of the City of Columbia, the eastern portion of Ft. Jackson, and Shaw Air Force Base. I-20 crosses the area, together with U.S. Hwy 601, U.S. Hwy 1, and U.S. Hwys 378/76 and S.C. Hwy 12. There are also several large and growing subdivisions, the Richland County Industrial Park, and a privately owned solid waste landfill to add to future growth in the area. Sewer is provided to this area through a regional system located in Kershaw County. Water service is available from the City of Columbia's water system. A large portion of the watershed consists of river bottomland swamp forests, which are heavily forested for timber.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

A TMDL was developed by SCDHEC and approved by EPA for ***Kelly Creek*** water quality monitoring site CW-154 and ***Spears Creek*** site CW-166 to determine the maximum amount of fecal coliform bacteria they can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the streams were determined to be failed septic systems, cattle-in-stream, and runoff from pastureland. The TMDL states that a 65% reduction in fecal coliform loading at CW-154 and 61% reduction at CW-166 is necessary for the streams to meet the recreational use standard. For more detailed information on TMDLs, please visit www.scdhec.gov/tmdl.

Special Studies

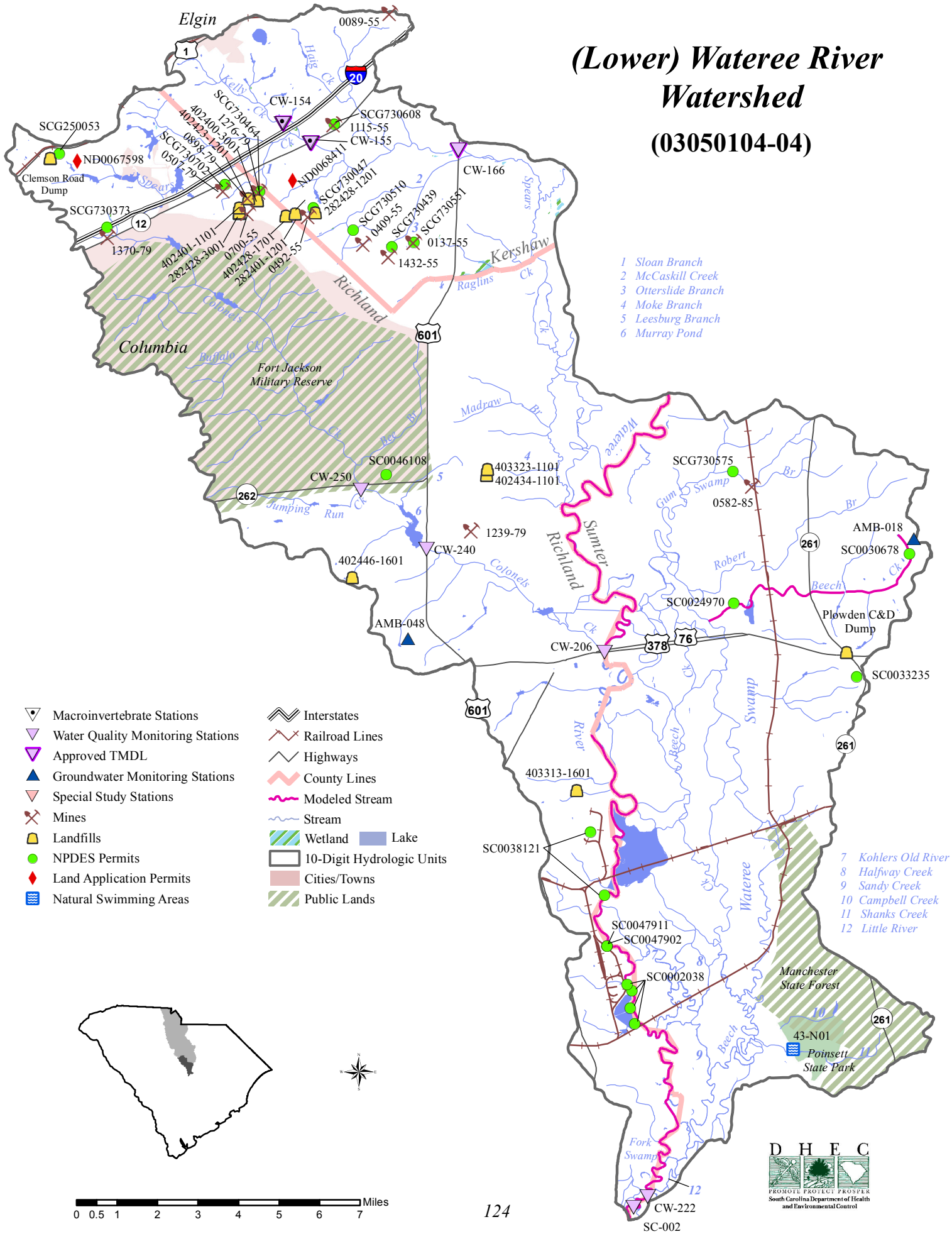
COWASEE Basin Focus Area

The COWASEE Basin covers over 215,000 acres in the midlands of South Carolina and includes the Congaree, Wateree and upper Santee River watersheds. Based on the ACE Basin focus area model, land trusts and other conservation organizations have come together to protect land in the COWASEE basin through land acquisition and conservation easements. The focus area is also a priority waterfowl restoration area where basin partners are implementing research and management to improve waterfowl habitat and populations. Organizations working in the COWASEE basin include the Congaree Land Trust, Ducks Unlimited, Friends of Congaree Swamp, the USDA Natural Resources Conservation Service, Richland County Conservation Commission, the South Carolina Department of Natural Resources, Sumter County Soil and Water Conservation District, and The Conservation Fund.

Water Quality Model of the Upper Wateree River and Allocation of Oxygen Demand

The Kershaw County Water and Sewer Authority contracted with the U.S. Geological Survey to conduct an extensive modeling study of the upper Wateree River. Model development was completed in 1999. The study included the characterization of streamflow and water quality in the river and the development of hydrodynamic and water quality computer simulation models to determine allowable loads for oxygen demanding substances. Together, the models are designed to predict water quality, especially dissolved oxygen levels, under various streamflow and loading conditions.

The USGS model was converted to a wasteload allocation tool and the allowable oxygen demand load to the upper Wateree River determined. The new model required an overall reduction of 27% from the previously permitted load. With input from the Central Midlands Council of Governments (CMCOG) and the Santee Lynches Regional Council of Governments (SLRCOG), the available load was allocated with the CMGOG's one discharge being allocated 31% of the load and the SLRCOG's five discharges being allocated 69% of the load. The agreed upon loadings have been incorporated into NPDES permits for the individual dischargers.


(Lower) Wateree River Watershed
(03050104-04)
Elgin
Columbia
Fort Jackson Military Reserve
Clemson Road Dump
Plowden C&D Dump
Manchester State Forest
Poinsett State Park
1 Sloan Branch
2 McCaskill Creek
3 Otterslide Branch
4 Moke Branch
5 Leesburg Branch
6 Murray Pond
7 Kohlers Old River
8 Halfway Creek
9 Sandy Creek
10 Campbell Creek
11 Shanks Creek
12 Little River
SCG250053
ND0067598
SCG730373
1370-79
SCG730464
1276-79
402400-3001
402423-1201
SCG730702
0898-79
0507-79
CW-154
CW-155
SCG730608
1115-55
ND0068411
SCG730447
282428-1201
CW-166
SCG730510
0409-55
SCG730439
SCG730581
0137-55
1432-55
402401-1101
282428-3001
0700-55
402428-1701
282401-1201
0492-55
SC0046108
CW-250
403323-1101
402434-1101
1239-79
CW-240
402446-1601
AMB-048
SCG730575
0582-85
AMB-018
SC0030678
SC0024970
CW-206
SC0033235
403313-1601
SC0038121
SC0047911
SC0047902
SC0002038
43-N01
CW-222
SC-002
Macroinvertebrate Stations
Water Quality Monitoring Stations
Approved TMDL
Groundwater Monitoring Stations
Special Study Stations
Mines
Landfills
NPDES Permits
Land Application Permits
Natural Swimming Areas
Interstates
Railroad Lines
Highways
County Lines
Modeled Stream
Stream
Wetland
Lake
10-Digit Hydrologic Units
Cities/Towns
Public Lands
0 0.5 1 2 3 4 5 6 7 Miles
D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

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APPENDIX A.

Catawba River Basin

Ambient Water Quality Monitoring Site Descriptions

Station #	Type	Class	Description
03050101-15			
CW-197	P/INT	FW	LAKE WYLIE ABOVE MILL CREEK ARM AT END OF S-46-557
CW-192	S/W	FW	SOUTH FORK CROWDERS CREEK AT S-46-79 4.5 MI NW OF CLOVER
CW-152	P/SPRP	FW	CROWDERS CREEK AT US 321 0.5 MI N OF NC STATE LINE
CW-023	P/SPRP	FW	CROWDERS CREEK AT S-46-564 NE OF CLOVER
CW-024	W/BIO	FW	CROWDERS CREEK AT S-46-1104
CW-105	S/W	FW	BROWN CREEK AT S-46-226, 0.3 MI W OF OLD N.MAIN ST. IN CLOVER
RS-06020	RS06/BIO	FW	BEAVERDAM CREEK AT BRIDGE AT S-46-64 32 MI ENE OF CLOVER
CW-696	BIO	FW	BEAVERDAM CREEK AT S-46-114
CW-153	S/W	FW	BEAVERDAM CREEK AT S-46-152 8 MI E OF CLOVER
CW-027	S/SPRP	FW	LAKE WYLIE, CROWDERS CK ARM AT SC 49 AND SC 274
CW-245	W	FW	LAKE WYLIE, CROWDERS CK ARM –1ST POWERLINE UPSTR.OF MAIN POOL
CW-198	P/W	FW	LAKE WYLIE, OUTSIDE MOUTH OF CROWDERS CREEK ARM
CW-171	S/W	FW	ALLISON CREEK AT US 321, 3.1 MI S OF CLOVER
CW-134	S/W	FW	CALABASH BRANCH AT S-46-414 2.5 MI SE OF CLOVER
CW-249/CW-694	INT/BIO	FW	ALLISON CREEK AT S-46-114
CW-200	S/W	FW	LAKE WYLIE AT SC 274 , 9 MI NE OF YORK
CW-709	BIO	FW	LITTLE ALLISON CREEK AT SC 274
CW-201	P/W	FW	LAKE WYLIE, NORTH LAKEWOOD SD AT EBENEZER ACCESS
RL-06433	RL06	FW	LAKE WYLIE, 0.5MI W OF TEGA CAY
CW-230	W/INT	FW	LAKE WYLIE, AT DAM UNDER POWERLINES
03050103-01			
CW-247	W/SPRP	FW	SUGAR CREEK AT MECKLENBURG CO.RD 51 (IN N.C.)
CW-246/CW-627	BIO	FW	SUGAR CREEK UPSTREAM OF CONFLUENCE WITH MCALPINE CREEK
CW-226	P/SPRP	FW	MCALPINE CREEK AT US 521 IN NC
CW-064	S/W/BIO	FW	MCALPINE CREEK AT S-29-64
CW-009	S/W	FW	STEELE CREEK AT S-46-22 N OF FORT MILL
CW-203	W	FW	STEELE CREEK AT S-46-98
CW-681	BIO	FW	STEELE CREEK AT BY-PASS US 21
CW-011	S/W	FW	STEELE CREEK AT S-46-270
CW-013	P/W	FW	SUGAR CREEK AT SC 160 E OF FORT MILL
CW-036	S/INT	FW	SUGAR CREEK AT S-46-36
03050103-02			
CW-176	P/W	FW	SIXMILE CREEK AT S-29-54
CW-083	S/INT	FW	TWELVEMILE CREEK AT S-29-55 0.3 MI NW OF VAN WYCK
(CW-041)	S/INT	FW	CATAWBA RIVER AT SC 5 AT BOWATER
03050103-03			
CW-185	S/W	FW	CANE CREEK AT SC 200 5 MI NNE OF LANCASTER
RS-07043	RS07	FW	GILLS CREEK AT S-29-36 4.5MI ENE OF LANCASTER
RS-05403	RS05	FW	HANNAHS CREEK AT AT S-29-376 3.4MI E OF LANCASTER
CW-047	S/W	FW	GILLS CREEK AT US 521 NNW OF LANCASTER
CW-151	S/W	FW	BEAR CREEK AT S-29-362 3.5 MI SE OF LANCASTER
CW-131	S/W	FW	BEAR CREEK AT S-29-292 1.6 MI W OF LANCASTER
CW-210	BIO	FW	CANE CREEK AT SC 9 BYPASS
CW-017	S/INT	FW	CANE CREEK AT S-29-50
CW-232	W	FW	RUM CREEK AT S-29-187

Station #	Type	Class	Description
03050103-04			
CW-029	P/W	FW	FISHING CREEK AT SC 49 NE OF YORK
RS-07208	RS07/BIO	FW	LANGHAM BR AT BENFIELD RD BETW SC 324 & S-46-1172 4.2MI SE OF YORK
CW-005	P/W/BIO	FW	FISHING CREEK AT S-46-347 DOWNSTREAM OF YORK WWTP
CW-225	S/INT	FW	FISHING CREEK AT S-46-503
CW-212	S/W	FW	TOOLS FORK AT S-46-195 7 MI NW OF ROCK HILL
CW-006	S/W	FW	WILDCAT CREEK AT S-46-650
CW-096	S/W	FW	WILDCAT CREEK AT S-46-998 9 MI ENE OF MCCONNELLS
CW-224	S/W	FW	FISHING CREEK AT S-46-163
CW-695	BIO	FW	TAYLOR CREEK AT S-46-735
CW-654	BIO	FW	FISHING CREEK AT S-46-655
CL-021	W	FW	LAKE OLIPHANT, FOREBAY EQUIDISTANT FROM DAM & SHORE
CW-007	BIO	FW	SOUTH FORK FISHING CREEK AT S-12-50
CW-008	P/W	FW	FISHING CREEK AT SC 223 NE OF RICHBURG
CW-227	S/W	FW	NEELYS CREEK AT S-46-997
CW-234	W/INT/BIO	FW	TINKERS CREEK AT S-12-599
CW-233	W/INT	FW	FISHING CREEK AT S-12-77
03050103-05			
CW-088	S/W	FW	GRASSY RUN BRANCH AT SC 72 1.6 MI NE OF CHESTER
CW-002	P/W/BIO	FW	ROCKY CREEK AT S-12-335 3.5 MI E OF CHESTER
CW-708	BIO	FW	BEAVERDAM CREEK AT BRIDGE ON S-12-198 3.5 MI E OF CHESTER
RS-06171	RS06	FW	BEAVERDAM CREEK AT BRIDGE ON S-12-198 3.5 MI E OF CHESTER
CW-067	BIO	FW	LITTLE ROCKY CREEK AT S-12-144
CW-236	W/INT	FW	ROCKY CREEK AT S-12-138
CW-175	S/W	FW	CEDAR CREEK RESERVOIR/ROCKY CK ARM AT S-12-141 NW OF GREAT FALLS
03050103-06			
CW-221	S/W	FW	HIDDEN CREEK AT HWY. 161, 0.4 MI W OF I-77
CW-014	P/SPRP	FW	CATAWBA RIVER AT US 21
RS-06176	RS06	FW	SIXMILE CREEK AT BRIDGE ON S-46-691, 2.9MI NE OF RODDY
CW-041	PSPRP	FW	CATAWBA RIVER AT SC 5 ABOVE BOWATER
CW-145	W/INT	FW	WAXHAW CREEK AT S-29-29
CW-016	P/INT	FW	CATAWBA RIVER AT SC 9 AT FORT LAWN
CW-016F	P/W	FW	FISHING CREEK RESERVOIR 2 MI BELOW CANE CREEK
CW-057	P/INT	FW	FISHING CREEK RESERVOIR 75 FT ABOVE DAM NEAR GREAT FALLS
RL-05414	RL05	FW	GREAT FALLS RESERVOIR, 1.0 MI E JUNCTION OF SC 99 AND US 21
RL-08062	RL08	FW	GREAT FALLS RESERVOIR, 0.9 MI OF NITROLEE, W SIDE OF CUT BETW 2 ISLANDS
RL-04379	RL04	FW	CEDAR CREEK RESERVOIR, 1.25 MI ESE OF GREAT FALLS, NW OF HILL ISLAND
CW-235	W/INT	FW	CAMP CREEK AT SC 97
RL-06431	RL06	FW	CEDAR CREEK RESERVOIR, 1.6 MI SE OF GREAT FALLS, E OF BIG ISLAND
RL-01007	RL01	FW	CEDAR CREEK RESERVOIR, 2.15 MI SE OF GREAT FALLS
RL-04375	RL04	FW	CEDAR CREEK RESERVOIR, 2.2 MI SE OF GREAT FALLS, SE OF BOWDEN ISLAND
RL-07003	RL07	FW	CEDAR CREEK RES. NEAR E SHORE OF PICKETT ISLAND, 0.5MI NNW OF S-29-405
RL-05391	RL05	FW	CEDAR CREEK RES.R, 0.42 MI NNW OF S-29-405 ON LANCASTER/CHESTER LINE
RL-06443	RL06	FW	CEDAR CREEK RESERVOIR, 2.3 MI SE OF GREAT FALLS, S OF PICKETT ISLAND
RL-06429	RL06	FW	CEDAR CREEK RESERVOIR, 1.2 MI SE OF GREAT FALLS, W OF BIG ISLAND
CW-174	S/W	FW	CEDAR CREEK RES. AT UNIMPROVED RD ABOVE JUNCTION WITH ROCKY CREEK
RL-08046	RL08	FW	CEDAR CK RES., 0.27 MI SE OF S-12-141 BELOW TAILRACE FR GREAT FALLS DAM
RL-05416	RL05	FW	CEDAR CR RES., DEBUTARY CK BRANCH 0.4 MI E OF DEBUTARY CK & S-20-268
CW-033	W	FW	CEDAR CREEK RESERVOIR 100 M N OF DAM

Groundwater Monitoring Sites

Well #	Class	Aquifer	Location
03050103-04			
AMB-074	GB	PIEDMONT BEDROCK	GUTHRIES

For further details concerning sampling frequency and parameters sampled, please visit our website at www.scdhec.gov/eqc/admin/html/eqcpubs.html#wqreports for the current State of S.C. Monitoring Strategy.

Water Quality Data

Spreadsheet Legend

Station Information:

STATION NUMBER Station ID

TYPE SCDHEC station type code

P = Primary station, sampled monthly all year round

S = Secondary station, sampled monthly May - October

P* = Secondary station upgraded to primary station parameter coverage and sampling frequency for basin study

W = Special watershed station added for the Edisto River Basin study

BIO = Indicates macroinvertebrate community data assessed

INT = Integrator Station (approximates a Primary station)

RL = Random Lake station

RO = Random Open water station

RS = Random Stream station

RT = Random Tide Creek station

WATERBODY NAME Stream or Lake Name

CLASS Stream classification at the point where monitoring station is located

Parameter Abbreviations and Parameter Measurement Units:

DO	Dissolved Oxygen (mg/l)		
BOD	Five-Day Biochemical Oxygen Demand (mg/l)	**NH3**	Ammonia (mg/l)
pH	pH (SU)	**CD**	Cadmium (ug/l)
TP	Total Phosphorus (mg/l)	**CR**	Chromium (ug/l)
TN	Total Nitrogen (mg/l)	**CU**	Copper (ug/l)
TURB	Turbidity (NTU)	**PB**	Lead (ug/l)
TSS	Total Suspended Solids (mg/l)	**HG**	Mercury (ug/l)
BACT	Fecal Coliform Bacteria (#/100 ml)	**NI**	Nickel (ug/l)
		ZN	Zinc (ug/l)

Statistical Abbreviations:

N For *standards compliance*, number of surface samples collected between January 2002 and December 2006. For *trends*, number of surface samples collected between January 1992 and December 2006.

EXC. Number of samples contravening the appropriate standard

% Percentage of samples contravening the appropriate standard

MEAN EXC. Mean of samples that contravened the applied standard

MED For *heavy metals with a human health criterion*, this is the median of all surface samples between January 2002 and December 2006. DL indicates that the median was the detection limit.

MAG Magnitude of any statistically significant trend, average change per year, expressed in parameter measurement units

GEO MEAN Geometric mean of fecal coliform bacteria samples collected between January 2002 and December 2006

Key to Trends:

D Statistically significant decreasing trend in parameter concentration

I Statistically significant increasing trend in parameter concentration

***** No statistically significant trend

STATION				DO	DO	DO	MEAN	TRENDS (94-2008)					
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG
03050101-15													
CW-197	INT	LAKE WYLIE	FW	56	1	1.8	4.97	NS	165	0.005	NS	152	0
CW-192	CS	SOUTH FORK CROWDERS CK	FW	12	0	0		NS	59	-0.05	I	59	0.162
CW-152	SPRP	CROWDERS CK	FW	56	0	0		D	173	-0.025	I	161	0.045
CW-023	SPRP	CROWDERS CK	FW	55	0	0		NS	170	0.01	NS	160	0
CW-024	CS	CROWDERS CK	FW	14	0	0							
CW-105	CS	BROWN CK	FW	11	0	0		NS	50	0.014	I	50	0.127
RS-06020	RS06	BEAVERDAM CK	FW	12	0	0							
CW-153	CS	BEAVERDAM CK	FW	12	0	0		D	56	-0.1	I	56	0.1
CW-027	SPRP	LAKE WYLIE	FW	52	2	3.8	4.7	D	124	-0.072	D	111	-0.133
CW-245/ CW-665	CS	LAKE WYLIE	FW	11	0	0							
CW-198	CS	LAKE WYLIE	FW	10	0	0		NS	96	0	NS	97	0
CW-171	CS	ALLISON CK	FW	9	0	0		NS	56	0.004	I	56	0.088
CW-134	CS	CALABASH BRANCH	FW	10	0	0		NS	57	0	NS	57	0.052
CW-249	INT	ALLISON CK	FW	57	0	0		NS	90	0.031	I	79	0
CW-200	CS	LAKE WYLIE	FW	8	0	0		NS	57	0	I	56	0.129
CW-201	CS	LAKE WYLIE	FW	8	0	0		NS	95	-0.035	D	95	-0.05
RL-06433	RL06	LAKE WYLIE	FW	11	0	0							
CW-230/ CL-057	INT	LAKE WYLIE	FW	56	0	0		NS	95	0.057	I	84	0
03050103-01													
CW-247/ CW-592	I*	SUGAR CK	FW	34	0	0		NS	68	0.01	NS	68	0
CW-246/ CW-627	I*	SUGAR CK											
CW-226	I*	MCALPINE CK	FW	24	1	4.2	4.87	NS	140	-0.01	NS	138	0.033
CW-064	SPRP	MCALPINE CK	FW	36	1	2.8	4.44	NS	83	0.029	I	69	0.1
CW-009	CS	STEELE CK	FW	12	0	0		NS	59	0.05	I	58	0.125
CW-203	CS	STEELE CK	FW	11	0	0							
CW-011	CS	STEELE CK	FW	10	0	0		D	58	-0.067	I	58	0.086
CW-013	CS	SUGAR CK	FW	11	0	0		NS	100	0.025	NS	100	0
CW-036	INT	SUGAR CK	FW	57	0	0		NS	133	0.02	I	119	0.133
03050103-02													
CW-176	CS	SIXMILE CK	FW	8	0	0		D	102	-0.062	I	100	0.073
CW-083	INT	TWELVEMILE CK	FW	56	2	3.6	4.51	D	133	-0.05	I	118	0.089
CW-041/ RS-12104	I*	CATAWBA RVR	FW	34	0	0		NS	139	0	I	139	0.074

STATION				pH	pH	pH	MEAN	TRENDS (94-2008)			TURB	TURB	TURB	MEAN	TRENDS (94-2008)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	PH	N	MAG	N	EXC.	%	EXC.	TURB	N	MAG
03050101-15																	
CW-197	INT	LAKE WYLIE	FW	56	5	8.9	7.094	NS	166	0.012	55	0	0		D	164	-0.156
CW-192	CS	SOUTH FORK CROWDERS CK	FW	12	0	0		NS	59	-0.007	12	0	0		NS	58	-0.143
CW-152	SPRP	CROWDERS CK	FW	57	0	0		NS	174	0.004	56	7	12.5	115	NS	172	-0.106
CW-023	SPRP	CROWDERS CK	FW	55	1	1.8	5.65	I	171	0.02	54	8	14.82	163.75	D	170	-0.2
CW-024	CS	CROWDERS CK	FW	14	0	0					13	0	0				
CW-105	CS	BROWN CK	FW	11	0	0		NS	50	-0.017	11	0	0		NS	50	-0.017
RS-06020	RS06	BEAVERDAM CK	FW	12	0	0					12	0	0				
CW-153	CS	BEAVERDAM CK	FW	12	0	0		NS	56	0	12	2	16.67	95	I	56	0.567
CW-027	SPRP	LAKE WYLIE	FW	52	1	1.9	5.9	NS	124	0	52	6	11.54	146.667	NS	124	0.4
CW-245/ CW-665	CS	LAKE WYLIE	FW	11	1	9.1	8.85				11	1	9.091	33			
CW-198	CS	LAKE WYLIE	FW	10	1	10	8.9	I	97	0.025	10	0	0		D	98	-0.207
CW-171	CS	ALLISON CK	FW	9	0	0		NS	56	0	9	0	0		NS	55	0
CW-134	CS	CALABASH BRANCH	FW	10	0	0		NS	57	0.004	10	0	0		I	57	0.627
CW-249	INT	ALLISON CK	FW	57	0	0		NS	90	0.019	56	8	14.29	196.875	NS	89	-0.255
CW-200	CS	LAKE WYLIE	FW	8	3	38	7.67	NS	57	0	8	2	25	50.5	NS	56	0.182
CW-201	CS	LAKE WYLIE	FW	8	1	13	9.01	NS	96	0	8	0	0		D	96	-0.167
RL-06433	RL06	LAKE WYLIE	FW	11	1	9.1	8.54				11	0	0				
CW-230/ CL-057	INT	LAKE WYLIE	FW	56	10	18	7.644	I	96	0.058	55	0	0		NS	95	0.025
03050103-01																	
CW-247/ CW-592	I*	SUGAR CK	FW	34	1	2.9	5.6	NS	68	0.055	34	8	23.53	193.75	NS	68	0.433
CW-246/ CW-627	I*	SUGAR CK															
CW-226	I*	MCALPINE CK	FW	24	0	0		NS	140	0.006	24	4	16.67	130	D	138	-0.74
CW-064	SPRP	MCALPINE CK	FW	36	1	2.8	0.3	NS	83	0.004	35	1	2.857	55	D	82	-0.367
CW-009	CS	STEELE CK	FW	12	0	0		D	59	-0.033	12	3	25	106.667	I	59	1.358
CW-203	CS	STEELE CK	FW	11	0	0					11	1	9.091	65			
CW-011	CS	STEELE CK	FW	11	0	0		NS	59	0.016	11	0	0		NS	59	-0.038
CW-013	CS	SUGAR CK	FW	12	0	0		NS	101	0.014	12	0	0		D	100	-0.933
CW-036	INT	SUGAR CK	FW	58	1	1.7	0.3	I	134	0.03	58	10	17.24	112.5	NS	131	-0.442
03050103-02																	
CW-176	CS	SIXMILE CK	FW	8	0	0		NS	102	-0.002	8	0	0		NS	101	0
CW-083	INT	TWELVEMILE CK	FW	58	2	3.4	3.1	NS	135	0.001	58	11	18.97	177.727	NS	132	-0.333
CW-041/ RS-12104	I*	CATAWBA RVR	FW	35	2	5.7	5.75	NS	141	0.011	35	3	8.571	185	NS	141	0

STATION				TP	TP	TP	MEAN	TRENDS (94-2008)			TN	TN	TN	MEAN	TRENDS (94-2008)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TP	N	MAG	N	EXC.	%	EXC.	TN	N	MAG
03050101-15																	
CW-197	INT	LAKE WYLIE	FW	55	1	1.8	0.12	D	128	-0.001	49	0	0		D	120	-0.005
CW-192	CS	SOUTH FORK CROWDERS CK	FW					I	46	0.003							
CW-152	SPRP	CROWDERS CK	FW					D	136	-0.013					D	141	-0.18
CW-023	SPRP	CROWDERS CK	FW					D	136	-0.01					D	145	-0.123
CW-024	CS	CROWDERS CK	FW														
CW-105	CS	BROWN CK	FW					NS	38	0.002							
RS-06020	RS06	BEAVERDAM CK	FW														
CW-153	CS	BEAVERDAM CK	FW					NS	44	0							
CW-027	SPRP	LAKE WYLIE	FW					D	96	-0.007					D	64	-0.102
CW-245/ CW-665	CS	LAKE WYLIE	FW	11	1	9.1	0.12				7	0	0				
CW-198	CS	LAKE WYLIE	FW	10	0	0		D	73	-0.002	7	0	0		D	72	-0.02
CW-171	CS	ALLISON CK	FW					NS	44	0							
CW-134	CS	CALABASH BRANCH	FW					D	45	-0.028							
CW-249	INT	ALLISON CK	FW					I	78	0					NS	57	-0.022
CW-200	CS	LAKE WYLIE	FW	8	3	38	0.081	NS	44	0	6	0	0				
CW-201	CS	LAKE WYLIE	FW	8	0	0		D	69	-0.002	6	1	17	1.634	NS	70	-0.006
RL-06433	RL06	LAKE WYLIE	FW	10	2	20	0.095				9	0	0				
CW-230/ CL-057	INT	LAKE WYLIE	FW	55	0	0		NS	83	0	47	0	0		NS	52	-0.006
03050103-01																	
CW-247/ CW-592	I*	SUGAR CK	FW					NS	56	0					NS	46	-0.325
CW-246/ CW-627	I*	SUGAR CK															
CW-226	I*	MCALPINE CK	FW					NS	101	-0.044					D	115	-0.254
CW-064	SPRP	MCALPINE CK	FW					D	69	-0.137					I	39	1.55
CW-009	CS	STEELE CK	FW					I	47	0.008							
CW-203	CS	STEELE CK	FW														
CW-011	CS	STEELE CK	FW					NS	47	0							
CW-013	CS	SUGAR CK	FW					NS	75	-0.008					I	91	0.27
CW-036	INT	SUGAR CK	FW					D	107	-0.062					I	75	0.736
03050103-02																	
CW-176	CS	SIXMILE CK	FW					D	72	-0.009					D	87	-0.092
CW-083	INT	TWELVEMILE CK	FW					I	108	0.017					NS	73	0.032
CW-041/ RS-12104	I*	CATAWBA RVR	FW					NS	101	0					I	114	0.074

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CHL N	CHL EXC.	CHL %	MEAN EXC.	TRENDS (94-2008) TSS	N	MAG
03050101-15										
CW-197	INT	LAKE WYLIE	FW	26	1	3.85	527.44			
CW-192	CS	SOUTH FORK CROWDERS CK	FW							
CW-152	SPRP	CROWDERS CK	FW					NS	131	-0.1
CW-023	SPRP	CROWDERS CK	FW					NS	127	-0.043
CW-024	CS	CROWDERS CK	FW							
CW-105	CS	BROWN CK	FW							
RS-06020	RS06	BEAVERDAM CK	FW							
CW-153	CS	BEAVERDAM CK	FW							
CW-027	SPRP	LAKE WYLIE	FW					NS	94	0.038
CW-245/ CW-665	CS	LAKE WYLIE	FW	5	0	0				
CW-198	CS	LAKE WYLIE	FW	5	0	0		NS	71	0
CW-171	CS	ALLISON CK	FW							
CW-134	CS	CALABASH BRANCH	FW							
CW-249	INT	ALLISON CK	FW							
CW-200	CS	LAKE WYLIE	FW	4	3	75	84.333			
CW-201	CS	LAKE WYLIE	FW	4	0	0				
RL-06433	RL06	LAKE WYLIE	FW	4	0	0				
CW-230/ CL-057	INT	LAKE WYLIE	FW	26	0	0				
03050103-01										
CW-247/ CW-592	I*	SUGAR CK	FW							
CW-246/ CW-627	I*	SUGAR CK								
CW-226	I*	MCALPINE CK	FW							
CW-064	SPRP	MCALPINE CK	FW							
CW-009	CS	STEELE CK	FW							
CW-203	CS	STEELE CK	FW							
CW-011	CS	STEELE CK	FW							
CW-013	CS	SUGAR CK	FW							
CW-036	INT	SUGAR CK	FW							
03050103-02										
CW-176	CS	SIXMILE CK	FW							
CW-083	INT	TWELVEMILE CK	FW					NS	92	-0.056
CW-041/ RS-12104	I*	CATAWBA RVR	FW					I	124	0.333

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS (94-2008) BACT	N	MAG
03050101-15											
CW-197	INT	LAKE WYLIE	FW	5	56	0	0		NS	152	0
CW-192	CS	SOUTH FORK CROWDERS CK	FW	195	12	1	8.333	760	NS	59	-18
CW-152	SPRP	CROWDERS CK	FW	303	57	15	26.32	3114	NS	174	-2.857
CW-023	SPRP	CROWDERS CK	FW	385	55	19	34.55	2923.158	NS	171	-4
CW-024	CS	CROWDERS CK	FW	328	12	4	33.33	1092.5			
CW-105	CS	BROWN CK	FW	430	31	17	54.84	1120.588	NS	55	33.718
RS-06020	RS06	BEAVERDAM CK	FW	409	12	6	50	1971.667			
CW-153	CS	BEAVERDAM CK	FW	280	33	8	24.24	1076.25	NS	61	-8.889
CW-027	SPRP	LAKE WYLIE	FW	120	52	9	17.31	3714.444	NS	120	0
CW-245/ CW-665	CS	LAKE WYLIE	FW	9	11	0	0				
CW-198	CS	LAKE WYLIE	FW	4	10	0	0		NS	93	-0.2
CW-171	CS	ALLISON CK	FW	426	31	14	45.16	795.714	NS	61	-1.806
CW-134	CS	CALABASH BRANCH	FW	415	32	15	46.88	1546.667	D	62	-26
CW-249	INT	ALLISON CK	FW	447	57	22	38.6	2748.636	NS	90	5.476
CW-200	CS	LAKE WYLIE	FW	41	8	0	0		NS	56	1
CW-201	CS	LAKE WYLIE	FW	8	8	0	0		D	87	-0.571
RL-06433	RL06	LAKE WYLIE	FW	6	11	0	0				
CW-230/ CL-057	INT	LAKE WYLIE	FW	3	56	0	0		NS	90	0
03050103-01											
CW-247/ CW-592	I*	SUGAR CK	FW	828	34	20	58.82	4904.5	I	68	67
CW-246/ CW-627	I*	SUGAR CK									
CW-226	I*	MCALPINE CK	FW	410	24	8	33.33	6675	D	139	-28.444
CW-064	SPRP	MCALPINE CK	FW	156	34	5	14.71	724	D	81	-22.321
CW-009	CS	STEELE CK	FW	710	12	10	83.33	1126	NS	59	19.5
CW-203	CS	STEELE CK	FW	312	11	3	27.27	2776.667			
CW-011	CS	STEELE CK	FW	135	11	0	0		NS	59	-4.167
CW-013	CS	SUGAR CK	FW	243	12	1	8.333	1000	D	101	-30.417
CW-036	INT	SUGAR CK	FW	439	57	24	42.11	1797.083	NS	132	-10.556
03050103-02											
CW-176	CS	SIXMILE CK	FW	171	8	0	0		D	101	-10
CW-083	INT	TWELVEMILE CK	FW	297	57	16	28.07	2529.375	D	132	-8.333
CW-041/ RS-12104	I*	CATAWBA RVR	FW	71	35	3	8.571	3100	I	140	1.5

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD %	MEAN EXC.	CR N	CR EXC.	CR %	MEAN EXC.	CU N	CU EXC.	CU %	MEAN EXC.
03050101-15															
CW-197	INT	LAKE WYLIE	FW	11	0	0		11	0	0		11	0	0	
CW-192	CS	SOUTH FORK CROWDERS CK	FW	4	0	0		4	0	0		4	0	0	
CW-152	SPRP	CROWDERS CK	FW	10	0	0		10	0	0		10	0	0	
CW-023	SPRP	CROWDERS CK	FW	12	0	0		12	0	0		12	1	8.3	11
CW-024	CS	CROWDERS CK	FW	4	0	0		4	0	0		4	1	25	12
CW-105	CS	BROWN CK	FW	3	0	0		3	0	0		3	0	0	
RS-06020	RS06	BEAVERDAM CK	FW	4	0	0		4	0	0		4	0	0	
CW-153	CS	BEAVERDAM CK	FW	4	0	0		4	0	0		4	1	25	13
CW-027	SPRP	LAKE WYLIE	FW	9	0	0		9	0	0		9	0	0	
CW-245/ CW-665	CS	LAKE WYLIE	FW	3	0	0		3	0	0		3	0	0	
CW-198	CS	LAKE WYLIE	FW	3	0	0		3	0	0		3	0	0	
CW-171	CS	ALLISON CK	FW	2	0	0		2	0	0		2	0	0	
CW-134	CS	CALABASH BRANCH	FW	2	0	0		2	0	0		2	0	0	
CW-249	INT	ALLISON CK	FW	12	0	0		12	0	0		12	0	0	
CW-200	CS	LAKE WYLIE	FW	2	0	0		2	0	0		2	0	0	
CW-201	CS	LAKE WYLIE	FW	2	0	0		2	0	0		2	0	0	
RL-06433	RL06	LAKE WYLIE	FW	5	0	0		5	0	0		5	0	0	
CW-230/ CL-057	INT	LAKE WYLIE	FW	11	1	9.1	11	11	0	0		11	2	18	61.5
03050103-01															
CW-247/ CW-592	I*	SUGAR CK	FW	4	0	0		4	0	0		4	0	0	
CW-246/ CW-627	I*	SUGAR CK													
CW-226	I*	MCALPINE CK	FW												
CW-064	SPRP	MCALPINE CK	FW	12	0	0		12	0	0		12	1	8.3	11
CW-009	CS	STEELE CK	FW	5	0	0		5	0	0		5	0	0	
CW-203	CS	STEELE CK	FW	4	0	0		4	0	0		4	1	25	18
CW-011	CS	STEELE CK	FW	4	0	0		4	0	0		4	0	0	
CW-013	CS	SUGAR CK	FW	4	0	0		4	0	0		4	0	0	
CW-036	INT	SUGAR CK	FW	12	0	0		12	0	0		12	0	0	
03050103-02															
CW-176	CS	SIXMILE CK	FW	3	0	0		3	0	0		3	0	0	
CW-083	INT	TWELVEMILE CK	FW	12	1	8.3	42	12	0	0		14	0	0	
CW-041/ RS-12104	I*	CATAWBA RVR	FW	4	0	0		4	0	0		4	0	0	

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	PB N	PB EXC.	PB %	MEAN EXC.	HG N	HG EXC.	HG %	MEAN EXC.	NI N	NI EXC.	NI %	MEAN EXC.	ZN N	ZN EXC.	ZN %	MEAN EXC.
03050101-15																			
CW-197	INT	LAKE WYLIE	FW	11	0	0		11	0	0		11	0	0		11	0	0	
CW-192	CS	SOUTH FORK CROWDERS CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-152	SPRP	CROWDERS CK	FW	10	0	0		10	0	0		10	0	0		10	0	0	
CW-023	SPRP	CROWDERS CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
CW-024	CS	CROWDERS CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-105	CS	BROWN CK	FW	3	0	0		3	0	0		3	0	0		3	0	0	
RS-06020	RS06	BEAVERDAM CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-153	CS	BEAVERDAM CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-027	SPRP	LAKE WYLIE	FW	9	0	0		9	0	0		9	0	0		9	0	0	
CW-245/ CW-665	CS	LAKE WYLIE	FW	3	0	0		3	0	0		3	0	0		3	0	0	
CW-198	CS	LAKE WYLIE	FW	3	0	0		3	0	0		3	0	0		3	0	0	
CW-171	CS	ALLISON CK	FW	2	0	0		2	0	0		2	0	0		2	0	0	
CW-134	CS	CALABASH BRANCH	FW	2	0	0		2	0	0		2	0	0		2	0	0	
CW-249	INT	ALLISON CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
CW-200	CS	LAKE WYLIE	FW	2	0	0		2	0	0		2	0	0		2	0	0	
CW-201	CS	LAKE WYLIE	FW	2	0	0		2	0	0		2	0	0		2	0	0	
RL-06433	RL06	LAKE WYLIE	FW	5	0	0		5	0	0		5	0	0		5	0	0	
CW-230/ CL-057	INT	LAKE WYLIE	FW	11	0	0		11	0	0		11	0	0		11	0	0	
03050103-01																			
CW-247/ CW-592	I*	SUGAR CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-246/ CW-627	I*	SUGAR CK																	
CW-226	I*	MCALPINE CK	FW																
CW-064	SPRP	MCALPINE CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
CW-009	CS	STEELE CK	FW	5	0	0		5	0	0		5	0	0		5	0	0	
CW-203	CS	STEELE CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-011	CS	STEELE CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-013	CS	SUGAR CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-036	INT	SUGAR CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
03050103-02																			
CW-176	CS	SIXMILE CK	FW	3	0	0		3	0	0		3	0	0		3	0	0	
CW-083	INT	TWELVEMILE CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
CW-041/ RS-12104	I*	CATAWBA RVR	FW	4	0	0		4	0	0		4	0	0		4	0	0	

STATION				DO	DO	DO	MEAN	TRENDS (94-2008)					
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG
03050103-03													
CW-185	CS	CANE CK	FW	9	2	22	3.51	D	61	-0.286	I	59	0.2
RS-07043	RS07	GILLS CK	FW	11	4	36	4.043						
RS-05403	RS05	HANNAHS CK	FW	12	5	42	3.788						
CW-047	CS	GILLS CK	FW	9	1	11	3.66	NS	58	-0.05	I	56	0.163
CW-151	CS	BEAR CK	FW	5	1	20	4.66	D	52	-0.329	I	51	0.233
CW-131	CS	BEAR CK	FW	9	0	0		NS	60	-0.075	NS	59	0.027
CW-017	INT	CANE CK	FW	49	19	39	3.62	NS	125	0.004	I	120	0.095
CW-232	CS	RUM CK	FW	10	5	50	4.218						
03050103-04													
CW-029	CS	FISHING CK	FW	11	0	0		D	94	-0.055	I	93	0.05
RS-07208	RS07	LANGHAM BRANCH	FW	10	1	10	3						
CW-005	CS	FISHING CK	FW	13	1	7.7	4.85	D	98	-0.05	NS	99	0.05
CW-225	INT	FISHING CK	FW	53	0	0		NS	130	-0.033	I	121	0.1
CW-212	CS	TOOLS FORK	FW	7	0	0		NS	51	-0.009	NS	50	0
CW-006	CS	WILDCAT CK	FW	8	4	50	4.185	D	59	-0.167	I	59	0.125
CW-096	CS	WILDCAT CK	FW	10	1	10	4.05	D	63	-0.061	I	64	0.161
CW-224	CS	FISHING CK	FW	11	0	0		NS	62	-0.017	I	62	0.096
CL-021	CS	LAKE OLIPHANT	FW	12	1	8.3	2.32						
CW-008	CS	FISHING CK	FW	11	0	0		NS	99	-0.05	I	97	0.08
CW-227	CS	NEELYS CK	FW	8	1	13	3.91	NS	56	-0.05	NS	56	0.017
CW-234	INT	TINKERS CK	FW	52	0	0		NS	86	0.037	NS	74	0
CW-233	INT	FISHING CK	FW	60	0	0		NS	100	0.057	I	85	0.092
03050103-05													
CW-088	CS	GRASSY RUN BRANCH	FW	7	0	0		NS	52	0.087	I	52	0.3
CW-002	CS	ROCKY CK	FW	8	0	0		NS	96	-0.029	NS	93	0
RS-06171	RS06	BEAVERDAM CK	FW	12	0	0							
CW-236	INT	ROCKY CK	FW	58	0	0		NS	97	0.01	I	84	0.1
CW-175	CS	LAKE, CEDAR CK RESERVOIR	FW	12	2	17	4.86	D	62	-0.125	NS	61	0.056

STATION				pH	pH	pH	MEAN	TRENDS (94-2008)			TURB	TURB	TURB	MEAN	TRENDS (94-2008)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	PH	N	MAG	N	EXC.	%	EXC.	TURB	N	MAG
03050103-03																	
CW-185	CS	CANE CK	FW	9	0	0		NS	61	-0.028	9	1	11.11	120	NS	61	0.608
RS-07043	RS07	GILLS CK	FW	11	0	0					11	1	9.091	95			
RS-05403	RS05	HANNAHS CK	FW	12	1	8.3	5.5				12	1	8.333	803			
CW-047	CS	GILLS CK	FW	9	0	0		NS	57	-0.014	9	0	0		NS	58	-0.233
CW-151	CS	BEAR CK	FW	5	0	0		NS	52	-0.037	5	0	0		NS	52	0.136
CW-131	CS	BEAR CK	FW	9	0	0		NS	61	-0.006	9	0	0		NS	61	-0.418
CW-017	INT	CANE CK	FW	49	3	6.1	5.767	D	125	-0.019	49	6	12.25	122.5	NS	126	-0.333
CW-232	CS	RUM CK	FW	10	0	0					10	2	20	62.5			
03050103-04																	
CW-029	CS	FISHING CK	FW	12	0	0		NS	95	-0.006	12	1	8.333	80	NS	94	-0.127
RS-07208	RS07	LANGHAM BRANCH	FW	11	0	0					11	1	9.091	90			
CW-005	CS	FISHING CK	FW	14	0	0		I	99	0.012	13	1	7.692	90	NS	99	-0.227
CW-225	INT	FISHING CK	FW	55	1	1.8	5.8	I	132	0.024	55	6	10.91	121.667	NS	132	-0.04
CW-212	CS	TOOLS FORK	FW	7	0	0		I	51	0.033	7	2	28.57	130	NS	51	-0.583
CW-006	CS	WILDCAT CK	FW	8	0	0		NS	59	0	8	0	0		NS	59	-0.012
CW-096	CS	WILDCAT CK	FW	11	0	0		I	64	0.022	11	0	0		NS	64	-0.04
CW-224	CS	FISHING CK	FW	12	0	0		NS	63	0.018	12	3	25	91.667	NS	62	0
CL-021	CS	LAKE OLIPHANT	FW	12	3	25	8.87				12	0	0				
CW-008	CS	FISHING CK	FW	11	0	0		NS	99	0.001	11	1	9.091	190	NS	99	-0.525
CW-227	CS	NEELYS CK	FW	8	0	0		NS	56	-0.029	8	0	0		NS	56	0.25
CW-234	INT	TINKERS CK	FW	52	2	3.8	5.725	NS	86	-0.016	52	3	5.769	125	NS	86	-0.297
CW-233	INT	FISHING CK	FW	60	1	1.7	5.99	I	100	0.033	60	7	11.67	135.714	NS	100	-0.222
03050103-05																	
CW-088	CS	GRASSY RUN BRANCH	FW	7	0	0		NS	52	-0.03	7	1	14.29	130	I	52	1
CW-002	CS	ROCKY CK	FW	8	0	0		NS	96	0	8	0	0		NS	95	0
RS-06171	RS06	BEAVERDAM CK	FW	12	0	0					12	0	0				
CW-236	INT	ROCKY CK	FW	58	2	3.4	3.705	NS	97	-0.005	57	6	10.53	185	NS	96	-0.067
CW-175	CS	LAKE, CEDAR CK RESERVOIR	FW	12	0	0		I	62	0.033	12	1	8.333	32	NS	62	-0.273

STATION				TP	TP	TP	MEAN	TRENDS (94-2008)			TN	TN	TN	MEAN	TRENDS (94-2008)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TP	N	MAG	N	EXC.	%	EXC.	TN	N	MAG
03050103-03																	
CW-185	CS	CANE CK	FW					I	47	0.01							
RS-07043	RS07	GILLS CK	FW														
RS-05403	RS05	HANNAHS CK	FW														
CW-047	CS	GILLS CK	FW					I	45	0.008							
CW-151	CS	BEAR CK	FW					I	39	0.007							
CW-131	CS	BEAR CK	FW					NS	47	0.002							
CW-017	INT	CANE CK	FW					NS	102	-0.002					NS	63	-0.014
CW-232	CS	RUM CK	FW														
03050103-04																	
CW-029	CS	FISHING CK	FW					NS	72	0					NS	75	-0.004
RS-07208	RS07	LANGHAM BRANCH	FW														
CW-005	CS	FISHING CK	FW					NS	75	0.002					I	92	0.091
CW-225	INT	FISHING CK	FW					NS	106	0.002					NS	77	0.043
CW-212	CS	TOOLS FORK	FW					NS	39	0.004							
CW-006	CS	WILDCAT CK	FW					I	44	0.002							
CW-096	CS	WILDCAT CK	FW					NS	51	0							
CW-224	CS	FISHING CK	FW					NS	49	0.005							
CL-021	CS	LAKE OLIPHANT	FW	12	5	42	0.656				12	0	0				
CW-008	CS	FISHING CK	FW					NS	75	-0.001					I	89	0.04
CW-227	CS	NEELYS CK	FW					NS	42	0.001							
CW-234	INT	TINKERS CK	FW					I	76	0.003					NS	65	0
CW-233	INT	FISHING CK	FW					NS	89	0					NS	66	-0.01
03050103-05																	
CW-088	CS	GRASSY RUN BRANCH	FW					NS	38	-0.007							
CW-002	CS	ROCKY CK	FW					NS	72	0.004					NS	84	-0.042
RS-06171	RS06	BEAVERDAM CK	FW														
CW-236	INT	ROCKY CK	FW					NS	86	0					NS	66	-0.015
CW-175	CS	LAKE, CEDAR CK RESERVOIR	FW	12	8	67	0.084	NS	46	0	8	3	38	1.847			

STATION					CHL	CHL	CHL	MEAN		TRENDS (94-2008)		
NUMBER	TYPE	WATERBODY NAME	CLASS		N	EXC.	%	EXC.		TSS	N	MAG
03050103-03												
CW-185	CS	CANE CK	FW									
RS-07043	RS07	GILLS CK	FW									
RS-05403	RS05	HANNAHS CK	FW									
CW-047	CS	GILLS CK	FW									
CW-151	CS	BEAR CK	FW									
CW-131	CS	BEAR CK	FW									
CW-017	INT	CANE CK	FW									
CW-232	CS	RUM CK	FW									
03050103-04												
CW-029	CS	FISHING CK	FW									
RS-07208	RS07	LANGHAM BRANCH	FW									
CW-005	CS	FISHING CK	FW									
CW-225	INT	FISHING CK	FW									
CW-212	CS	TOOLS FORK	FW									
CW-006	CS	WILDCAT CK	FW									
CW-096	CS	WILDCAT CK	FW									
CW-224	CS	FISHING CK	FW									
CL-021	CS	LAKE OLIPHANT	FW		6	1	16.7	136.3				
CW-008	CS	FISHING CK	FW									
CW-227	CS	NEELYS CK	FW									
CW-234	INT	TINKERS CK	FW									
CW-233	INT	FISHING CK	FW									
03050103-05												
CW-088	CS	GRASSY RUN BRANCH	FW									
CW-002	CS	ROCKY CK	FW									
RS-06171	RS06	BEAVERDAM CK	FW									
CW-236	INT	ROCKY CK	FW									
CW-175	CS	LAKE, CEDAR CK RESERVOIR	FW		6	0	0					

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS (94-2008) BACT	N	MAG
03050103-03											
CW-185	CS	CANE CK	FW	183	9	2	22.22	450	NS	60	-5
RS-07043	RS07	GILLS CK	FW	480	11	5	45.46	1520			
RS-05403	RS05	HANNAHS CK	FW	505	12	7	58.33	2348.572			
CW-047	CS	GILLS CK	FW	448	9	4	44.44	867.5	NS	57	-9.231
CW-151	CS	BEAR CK	FW	181	5	0	0		D	52	-19.75
CW-131	CS	BEAR CK	FW	473	9	6	66.67	1088.333	D	60	-188.571
CW-017	INT	CANE CK	FW	147	49	11	22.45	1278.182	D	126	-6.611
CW-232	CS	RUM CK	FW	148	10	1	10	1700			
03050103-04											
CW-029	CS	FISHING CK	FW	426	34	18	52.94	723.889	NS	100	6.667
RS-07208	RS07	LANGHAM BRANCH	FW	453	11	7	63.64	1105.714			
CW-005	CS	FISHING CK	FW	257	34	8	23.53	1028.75	NS	104	0
CW-225	INT	FISHING CK	FW	337	55	20	36.36	1060	D	132	-15.227
CW-212	CS	TOOLS FORK	FW	835	7	5	71.43	2118	NS	51	-57.5
CW-006	CS	WILDCAT CK	FW	94	8	0	0		NS	59	-39.167
CW-096	CS	WILDCAT CK	FW	180	11	2	18.18	815	NS	64	-15
CW-224	CS	FISHING CK	FW	217	33	5	15.15	736	NS	67	-8
CL-021	CS	LAKE OLIPHANT	FW	4	12	0	0				
CW-008	CS	FISHING CK	FW	152	32	7	21.88	2017.143	D	104	-7.143
CW-227	CS	NEELYS CK	FW	439	8	3	37.5	950	NS	55	8.571
CW-234	INT	TINKERS CK	FW	206	51	7	13.73	690	NS	85	2.5
CW-233	INT	FISHING CK	FW	266	60	16	26.67	1562.5	NS	100	4
03050103-05											
CW-088	CS	GRASSY RUN BRANCH	FW	1342	7	7	100	1454.286	NS	52	32.5
CW-002	CS	ROCKY CK	FW	263	66	16	24.24	1587.5	D	107	-9.615
RS-06171	RS06	BEAVERDAM CK	FW	300	11	4	36.36	1370			
CW-236	INT	ROCKY CK	FW	239	57	11	19.3	2371.818	NS	97	-4.286
CW-175	CS	LAKE, CEDAR CK RESERVOIR	FW	116	70	11	15.71	2070.909	D	74	-17.444

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD %	MEAN EXC.	CR N	CR EXC.	CR %	MEAN EXC.	CU N	CU EXC.	CU %	MEAN EXC.
03050103-03															
CW-185	CS	CANE CK	FW	3	0	0		3	0	0		3	0	0	
RS-07043	RS07	GILLS CK	FW	3	0	0		3	0	0		3	1	33	13
RS-05403	RS05	HANNAHS CK	FW												
CW-047	CS	GILLS CK	FW	3	0	0		3	0	0		3	0	0	
CW-151	CS	BEAR CK	FW												
CW-131	CS	BEAR CK	FW	3	0	0		3	0	0		3	1	33	12
CW-017	INT	CANE CK	FW	9	0	0		9	0	0		9	2	22	13.5
CW-232	CS	RUM CK	FW	3	0	0		3	0	0		3	0	0	
03050103-04															
CW-029	CS	FISHING CK	FW	4	0	0		4	0	0		4	0	0	
RS-07208	RS07	LANGHAM BRANCH	FW	3	0	0		3	0	0		3	0	0	
CW-005	CS	FISHING CK	FW	4	1	25	14	4	0	0		4	1	25	23
CW-225	INT	FISHING CK	FW	10	0	0		10	0	0		10	1	10	12
CW-212	CS	TOOLS FORK	FW	2	0	0		2	0	0		2	1	50	15
CW-006	CS	WILDCAT CK	FW	2	0	0		2	0	0		2	0	0	
CW-096	CS	WILDCAT CK	FW	3	0	0		3	0	0		3	1	33	12
CW-224	CS	FISHING CK	FW	4	0	0		4	0	0		4	0	0	
CL-021	CS	LAKE OLIPHANT	FW	4	0	0		4	0	0		4	0	0	
CW-008	CS	FISHING CK	FW	3	0	0		3	0	0		3	1	33	12
CW-227	CS	NEELYS CK	FW	2	0	0		2	0	0		2	0	0	
CW-234	INT	TINKERS CK	FW	11	0	0		11	0	0		11	1	9.1	14
CW-233	INT	FISHING CK	FW	12	0	0		12	0	0		12	0	0	
03050103-05															
CW-088	CS	GRASSY RUN BRANCH	FW	2	0	0		2	0	0		2	0	0	
CW-002	CS	ROCKY CK	FW	3	0	0		3	0	0		3	0	0	
RS-06171	RS06	BEAVERDAM CK	FW	4	0	0		4	0	0		4	0	0	
CW-236	INT	ROCKY CK	FW	12	1	8.3	16	12	0	0		12	1	8.3	17
CW-175	CS	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0	

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	PB N	PB EXC.	PB %	MEAN EXC.	HG N	HG EXC.	HG %	MEAN EXC.	NI N	NI EXC.	NI %	MEAN EXC.	ZN N	ZN EXC.	ZN %	MEAN EXC.
03050103-03																			
CW-185	CS	CANE CK	FW	3	0	0		3	0	0		3	0	0		3	0	0	
RS-07043	RS07	GILLS CK	FW	3	0	0		3	0	0		3	0	0		3	0	0	
RS-05403	RS05	HANNAHS CK	FW																
CW-047	CS	GILLS CK	FW	3	0	0		3	0	0		3	0	0		3	0	0	
CW-151	CS	BEAR CK	FW																
CW-131	CS	BEAR CK	FW	3	0	0		3	0	0		3	0	0		3	0	0	
CW-017	INT	CANE CK	FW	9	0	0		9	0	0		9	0	0		9	1	11	110
CW-232	CS	RUM CK	FW	3	0	0		3	0	0		3	0	0		3	0	0	
03050103-04																			
CW-029	CS	FISHING CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
RS-07208	RS07	LANGHAM BRANCH	FW	3	0	0		3	0	0		3	0	0		3	0	0	
CW-005	CS	FISHING CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-225	INT	FISHING CK	FW	10	0	0		10	0	0		10	0	0		10	0	0	
CW-212	CS	TOOLS FORK	FW	2	0	0		2	0	0		2	0	0		2	0	0	
CW-006	CS	WILDCAT CK	FW	2	0	0		2	0	0		2	0	0		2	0	0	
CW-096	CS	WILDCAT CK	FW	3	0	0		3	0	0		3	0	0		3	0	0	
CW-224	CS	FISHING CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CL-021	CS	LAKE OLIPHANT	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-008	CS	FISHING CK	FW	3	0	0		3	0	0		3	0	0		3	0	0	
CW-227	CS	NEELYS CK	FW	2	0	0		2	0	0		2	0	0		2	0	0	
CW-234	INT	TINKERS CK	FW	11	0	0		11	0	0		11	0	0		11	0	0	
CW-233	INT	FISHING CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
03050103-05																			
CW-088	CS	GRASSY RUN BRANCH	FW	2	0	0		2	0	0		2	0	0		2	0	0	
CW-002	CS	ROCKY CK	FW	3	0	0		3	0	0		3	1	33	30	3	0	0	
RS-06171	RS06	BEAVERDAM CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-236	INT	ROCKY CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
CW-175	CS	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0		4	0	0	

STATION				DO	DO	DO	MEAN	TRENDS (94-2008)					
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG
03050103-06													
CW-221	CS	CATAWBA RVR TRIB	FW	12	0	0		NS	55	0	I	55	0.143
CW-014	SPRP	CATAWBA RVR	FW	59	1	1.7	4.92	NS	170	0.022	I	155	0.085
RS-06176	RS06	SIXMILE CK	FW	11	0	0							
CW-041/ RS-12104	I*	CATAWBA RVR	FW	34	0	0		NS	139	0	I	139	0.074
CW-145	INT	WAXHAW CK	FW	53	1	1.9	4.19	NS	95	0.006	I	84	0.15
CW-016	INT	CATAWBA RVR	FW	60	0	0		I	172	0.042	I	156	0.02
CW-016F/ RL-11024	CS	LAKE, FISHING CK RESERVOIR	FW	10	0	0		NS	94	0.016	NS	96	-0.025
CW-057	INT	LAKE, FISHING CK RESERVOIR	FW	60	2	3.3	3.01	NS	170	0.039	I	157	0.03
RL-05414	RL05	LAKE, GREAT FALLS RESERVOIR	FW	11	1	9.1	4.51						
RL-08062	RL08	LAKE, GREAT FALLS RESERVOIR	FW	12	1	8.3	4.16						
RL-04379	RL04	LAKE, CEDAR CK RESERVOIR	FW	11	0	0							
CW-235	INT	CAMP CK	FW	47	2	4.3	4.615	NS	82	-0.042	NS	74	0.069
RL-06431	RL06	LAKE, CEDAR CK RESERVOIR	FW	12	1	8.3	3.78						
RL-01007/ RL-08067	RL01	LAKE, CEDAR CK RESERVOIR	FW	12	1	8.3	3.94						
RL-04375	RL04	LAKE, CEDAR CK RESERVOIR	FW	11	0	0							
RL-07003	RL07	LAKE, CEDAR CK RESERVOIR	FW	10	0	0							
RL-05391	RL05	LAKE, CEDAR CK RESERVOIR	FW	12	0	0							
RL-06443	RL06	LAKE, CEDAR CK RESERVOIR	FW	12	0	0							
RL-06429/ RL-07019	RL06	LAKE, GREAT FALLS RESERVOIR	FW	24	3	13	4.67						
CW-174	CS	LAKE, CEDAR CK RESERVOIR	FW	12	1	8.3	4.87	D	62	-0.089	I	61	0.07
RL-08046	RL08	LAKE, CEDAR CK RESERVOIR	FW	13	1	7.7	3.97						
RL-05416	RL05	LAKE, CEDAR CK RESERVOIR	FW	12	0	0							
CW-033	CS	LAKE, CEDAR CK RESERVOIR	FW	12	1	8.3	4.68						

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	pH N	pH EXC.	pH %	MEAN EXC.	TRENDS (94-2008) PH	TRENDS (94-2008) N	TRENDS (94-2008) MAG	TURB N	TURB EXC.	TURB %	MEAN EXC.	TRENDS (94-2008) TURB	TRENDS (94-2008) N	TRENDS (94-2008) MAG
03050103-06																	
CW-221	CS	CATAWBA RVR TRIB	FW	12	0	0		NS	56	0.004	12	0	0		I	56	0.567
CW-014	SPRP	CATAWBA RVR	FW	59	1	1.7	5	NS	170	-0.008	59	0	0		NS	170	-0.037
RS-06176	RS06	SIXMILE CK	FW	12	0	0					12	0	0				
CW-041/ RS-12104	I*	CATAWBA RVR	FW	35	2	5.7	5.75	NS	141	0.011	35	3	8.571	185	NS	141	0
CW-145	INT	WAXHAW CK	FW	53	3	5.7	5.283	NS	95	0.016	54	11	20.37	113.636	NS	96	-0.2
CW-016	INT	CATAWBA RVR	FW	60	2	3.3	5.725	I	172	0.016	60	5	8.333	88	NS	170	0.1
CW-016F/ RL-11024	CS	LAKE, FISHING CK RESERVOIR	FW	10	0	0		NS	93	0	10	1	10	35	D	95	-0.4
CW-057	INT	LAKE, FISHING CK RESERVOIR	FW	60	10	17	9.105	I	170	0.034	60	6	10	36.833	D	169	-0.333
RL-05414	RL05	LAKE, GREAT FALLS RESERVOIR	FW	11	0	0					11	0	0				
RL-08062	RL08	LAKE, GREAT FALLS RESERVOIR	FW	12	0	0					12	1	8.333	32			
RL-04379	RL04	LAKE, CEDAR CK RESERVOIR	FW	11	0	0					11	1	9.091	39			
CW-235	INT	CAMP CK	FW	47	5	11	5.674	NS	82	-0.025	46	5	10.87	121	NS	82	-0.317
RL-06431	RL06	LAKE, CEDAR CK RESERVOIR	FW	12	0	0					12	1	8.333	26			
RL-01007/ RL-08067	RL01	LAKE, CEDAR CK RESERVOIR	FW	12	1	8.3	8.52				12	1	8.333	29			
RL-04375	RL04	LAKE, CEDAR CK RESERVOIR	FW	11	1	9.1	8.69				11	1	9.091	29			
RL-07003	RL07	LAKE, CEDAR CK RESERVOIR	FW	11	3	27	8.773				11	0	0				
RL-05391	RL05	LAKE, CEDAR CK RESERVOIR	FW	12	1	8.3	9.05				12	0	0				
RL-06443	RL06	LAKE, CEDAR CK RESERVOIR	FW	12	2	17	8.57				12	2	16.67	26.5			
RL-06429/ RL-07019	RL06	LAKE, GREAT FALLS RESERVOIR	FW	24	1	4.2	8.63				24	1	4.167	33			
CW-174	CS	LAKE, CEDAR CK RESERVOIR	FW	12	0	0		NS	62	0	12	1	8.333	32	NS	62	0
RL-08046	RL08	LAKE, CEDAR CK RESERVOIR	FW	13	1	7.7	5.9				13	1	7.692	33			
RL-05416	RL05	LAKE, CEDAR CK RESERVOIR	FW	12	0	0					12	1	8.333	27			
CW-033	CS	LAKE, CEDAR CK RESERVOIR	FW	11	1	9.1	9.15				12	1	8.333	26			

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	TP N	TP EXC.	TP %	MEAN EXC.	TRENDS (94-2008) TP	TRENDS (94-2008) N	TRENDS (94-2008) MAG	TN N	TN EXC.	TN %	MEAN EXC.	TRENDS (94-2008) TN	TRENDS (94-2008) N	TRENDS (94-2008) MAG
03050103-06																	
CW-221	CS	CATAWBA RVR TRIB	FW					NS	44	0							
CW-014	SPRP	CATAWBA RVR	FW					NS	131	0					D	130	-0.008
RS-06176	RS06	SIXMILE CK	FW														
CW-041/ RS-12104	I*	CATAWBA RVR	FW					NS	101	0					I	114	0.074
CW-145	INT	WAXHAW CK	FW					NS	84	0					NS	67	-0.019
CW-016	INT	CATAWBA RVR	FW					D	132	-0.004					I	145	0.04
CW-016F/ RL-11024	CS	LAKE, FISHING CK RESERVOIR	FW	10	6	60	0.094	NS	71	-0.002	8	4	50	1.915	I	87	0.023
CW-057	INT	LAKE, FISHING CK RESERVOIR	FW	59	44	75	0.098	D	130	-0.006	54	15	28	1.799	I	139	0.011
RL-05414	RL05	LAKE, GREAT FALLS RESERVOIR	FW	11	11	100	0.1				10	2	20	1.515			
RL-08062	RL08	LAKE, GREAT FALLS RESERVOIR	FW	12	12	100	0.172				11	5	45	1.884			
RL-04379	RL04	LAKE, CEDAR CK RESERVOIR	FW	11	9	82	0.097				10	0	0				
CW-235	INT	CAMP CK	FW					NS	71	0					NS	41	0.002
RL-06431	RL06	LAKE, CEDAR CK RESERVOIR	FW	11	8	73	0.076				12	1	8.3	1.68			
RL-01007/ RL-08067	RL01	LAKE, CEDAR CK RESERVOIR	FW	12	9	75	0.321				10	2	20	1.745			
RL-04375	RL04	LAKE, CEDAR CK RESERVOIR	FW	11	10	91	0.088				10	0	0				
RL-07003	RL07	LAKE, CEDAR CK RESERVOIR	FW	11	1	9.1	0.069				6	1	17	1.82			
RL-05391	RL05	LAKE, CEDAR CK RESERVOIR	FW	12	11	92	0.085				11	0	0				
RL-06443	RL06	LAKE, CEDAR CK RESERVOIR	FW	12	3	25	0.063				12	0	0				
RL-06429/ RL-07019	RL06	LAKE, GREAT FALLS RESERVOIR	FW	24	16	67	0.078				20	4	20	1.727			
CW-174	CS	LAKE, CEDAR CK RESERVOIR	FW	12	10	83	0.075	NS	46	-0.004	8	2	25	2.005			
RL-08046	RL08	LAKE, CEDAR CK RESERVOIR	FW	13	10	77	0.082				11	5	45	10.812			
RL-05416	RL05	LAKE, CEDAR CK RESERVOIR	FW	12	12	100	0.09				11	2	18	1.715			
CW-033	CS	LAKE, CEDAR CK RESERVOIR	FW	12	5	42	0.065				7	1	14	1.86			

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CHL N	CHL EXC.	CHL %	MEAN EXC.	TRENDS (94-2008) TSS	N	MAG
03050103-06										
CW-221	CS	CATAWBA RVR TRIB	FW							
CW-014	SPRP	CATAWBA RVR	FW							
RS-06176	RS06	SIXMILE CK	FW							
CW-041/ RS-12104	I*	CATAWBA RVR	FW					I	124	0.333
CW-145	INT	WAXHAW CK	FW							
CW-016	INT	CATAWBA RVR	FW					NS	136	0.143
CW-016F/ RL-11024	CS	LAKE, FISHING CK RESERVOIR	FW	6	0	0				
CW-057	INT	LAKE, FISHING CK RESERVOIR	FW	28	3	10.7	42.079			
RL-05414	RL05	LAKE, GREAT FALLS RESERVOIR	FW	4	0	0				
RL-08062	RL08	LAKE, GREAT FALLS RESERVOIR	FW	5	0	0				
RL-04379	RL04	LAKE, CEDAR CK RESERVOIR	FW	6	0	0				
CW-235	INT	CAMP CK	FW							
RL-06431	RL06	LAKE, CEDAR CK RESERVOIR	FW	5	0	0				
RL-01007/ RL-08067	RL01	LAKE, CEDAR CK RESERVOIR	FW	5	0	0				
RL-04375	RL04	LAKE, CEDAR CK RESERVOIR	FW	6	0	0				
RL-07003	RL07	LAKE, CEDAR CK RESERVOIR	FW	6	0	0				
RL-05391	RL05	LAKE, CEDAR CK RESERVOIR	FW	5	0	0				
RL-06443	RL06	LAKE, CEDAR CK RESERVOIR	FW	8	0	0				
RL-06429/ RL-07019	RL06	LAKE, GREAT FALLS RESERVOIR	FW	13	0	0				
CW-174	CS	LAKE, CEDAR CK RESERVOIR	FW	6	0	0				
RL-08046	RL08	LAKE, CEDAR CK RESERVOIR	FW	6	0	0				
RL-05416	RL05	LAKE, CEDAR CK RESERVOIR	FW	5	0	0				
CW-033	CS	LAKE, CEDAR CK RESERVOIR	FW	6	0	0				

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS (94-2008) BACT	N	MAG
03050103-06											
CW-221	CS	CATAWBA RVR TRIB	FW	836	59	45	76.27	2127.778	NS	67	28
CW-014	SPRP	CATAWBA RVR	FW	75	59	1	1.695	500	NS	170	1.429
RS-06176	RS06	SIXMILE CK	FW	169	12	0	0				
CW-041/ RS-12104	I*	CATAWBA RVR	FW	71	35	3	8.571	3100	I	140	1.5
CW-145	INT	WAXHAW CK	FW	557	53	29	54.72	1855.517	NS	95	10
CW-016	INT	CATAWBA RVR	FW	78	60	6	10	1030	NS	169	0.845
CW-016F/ RL-11024	CS	LAKE, FISHING CK RESERVOIR	FW	37	10	0	0		D	93	-2.422
CW-057	INT	LAKE, FISHING CK RESERVOIR	FW	9	60	0	0		D	157	-0.333
RL-05414	RL05	LAKE, GREAT FALLS RESERVOIR	FW	9	11	0	0				
RL-08062	RL08	LAKE, GREAT FALLS RESERVOIR	FW	21	12	0	0				
RL-04379	RL04	LAKE, CEDAR CK RESERVOIR	FW	24	11	0	0				
CW-235	INT	CAMP CK	FW	239	45	13	28.89	1136.923	NS	81	0
RL-06431	RL06	LAKE, CEDAR CK RESERVOIR	FW	13	12	0	0				
RL-01007/ RL-08067	RL01	LAKE, CEDAR CK RESERVOIR	FW	8	12	0	0				
RL-04375	RL04	LAKE, CEDAR CK RESERVOIR	FW	10	11	0	0				
RL-07003	RL07	LAKE, CEDAR CK RESERVOIR	FW	6	11	0	0				
RL-05391	RL05	LAKE, CEDAR CK RESERVOIR	FW	10	12	0	0				
RL-06443	RL06	LAKE, CEDAR CK RESERVOIR	FW	15	12	0	0				
RL-06429/ RL-07019	RL06	LAKE, GREAT FALLS RESERVOIR	FW	18	24	0	0				
CW-174	CS	LAKE, CEDAR CK RESERVOIR	FW	18	22	0	0		D	67	-2.727
RL-08046	RL08	LAKE, CEDAR CK RESERVOIR	FW	19	13	0	0				
RL-05416	RL05	LAKE, CEDAR CK RESERVOIR	FW	22	12	0	0				
CW-033	CS	LAKE, CEDAR CK RESERVOIR	FW	11	12	0	0				

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD %	MEAN EXC.	CR N	CR EXC.	CR %	MEAN EXC.	CU N	CU EXC.	CU %	MEAN EXC.
03050103-06															
CW-221	CS	CATAWBA RVR TRIB	FW	4	0	0		4	0	0		4	0	0	
CW-014	SPRP	CATAWBA RVR	FW	12	1	8.3	19	12	0	0		12	1	8.3	22
RS-06176	RS06	SIXMILE CK	FW	4	0	0		4	0	0		4	0	0	
CW-041/ RS-12104	I*	CATAWBA RVR	FW	4	0	0		4	0	0		4	0	0	
CW-145	INT	WAXHAW CK	FW	12	1	8.3	21	12	0	0		12	3	25	16.333
CW-016	INT	CATAWBA RVR	FW	12	1	8.3	11	12	0	0		12	1	8.3	15
CW-016F/ RL-11024	CS	LAKE, FISHING CK RESERVOIR	FW	3	0	0		3	0	0		3	0	0	
CW-057	INT	LAKE, FISHING CK RESERVOIR	FW	13	0	0		13	0	0		13	0	0	
RL-05414	RL05	LAKE, GREAT FALLS RESERVOIR	FW												
RL-08062	RL08	LAKE, GREAT FALLS RESERVOIR	FW	4	0	0		4	0	0		4	0	0	
RL-04379	RL04	LAKE, CEDAR CK RESERVOIR	FW												
CW-235	INT	CAMP CK	FW	7	0	0		7	0	0		7	0	0	
RL-06431	RL06	LAKE, CEDAR CK RESERVOIR	FW	5	0	0		5	0	0		5	0	0	
RL-01007/ RL-08067	RL01	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0	
RL-04375	RL04	LAKE, CEDAR CK RESERVOIR	FW												
RL-07003	RL07	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0	
RL-05391	RL05	LAKE, CEDAR CK RESERVOIR	FW												
RL-06443	RL06	LAKE, CEDAR CK RESERVOIR	FW	5	0	0		5	0	0		5	0	0	
RL-06429/ RL-07019	RL06	LAKE, GREAT FALLS RESERVOIR	FW	9	0	0		9	0	0		9	0	0	
CW-174	CS	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0	
RL-08046	RL08	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0	
RL-05416	RL05	LAKE, CEDAR CK RESERVOIR	FW												
CW-033	CS	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0	

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	PB N	PB EXC.	PB %	MEAN EXC.	HG N	HG EXC.	HG %	MEAN EXC.	NI N	NI EXC.	NI %	MEAN EXC.	ZN N	ZN EXC.	ZN %	MEAN EXC.
03050103-06																			
CW-221	CS	CATAWBA RVR TRIB	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-014	SPRP	CATAWBA RVR	FW	12	0	0		12	0	0		12	0	0		12	0	0	
RS-06176	RS06	SIXMILE CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-041/ RS-12104	I*	CATAWBA RVR	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-145	INT	WAXHAW CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
CW-016	INT	CATAWBA RVR	FW	12	0	0		12	0	0		12	0	0		12	0	0	
CW-016F/ RL-11024	CS	LAKE, FISHING CK RESERVOIR	FW	3	0	0		3	0	0		3	0	0		3	0	0	
CW-057	INT	LAKE, FISHING CK RESERVOIR	FW	13	0	0		13	0	0		13	0	0		13	0	0	
RL-05414	RL05	LAKE, GREAT FALLS RESERVOIR	FW																
RL-08062	RL08	LAKE, GREAT FALLS RESERVOIR	FW	4	0	0		4	0	0		4	0	0		4	0	0	
RL-04379	RL04	LAKE, CEDAR CK RESERVOIR	FW																
CW-235	INT	CAMP CK	FW	7	0	0		7	0	0		7	0	0		7	0	0	
RL-06431	RL06	LAKE, CEDAR CK RESERVOIR	FW	5	0	0		5	0	0		5	0	0		5	0	0	
RL-01007/ RL-08067	RL01	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0		4	0	0	
RL-04375	RL04	LAKE, CEDAR CK RESERVOIR	FW																
RL-07003	RL07	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0		4	0	0	
RL-05391	RL05	LAKE, CEDAR CK RESERVOIR	FW																
RL-06443	RL06	LAKE, CEDAR CK RESERVOIR	FW	5	0	0		5	0	0		5	0	0		5	0	0	
RL-06429/ RL-07019	RL06	LAKE, GREAT FALLS RESERVOIR	FW	9	0	0		9	0	0		9	0	0		9	0	0	
CW-174	CS	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0		4	0	0	
RL-08046	RL08	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0		4	0	0	
RL-05416	RL05	LAKE, CEDAR CK RESERVOIR	FW																
CW-033	CS	LAKE, CEDAR CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0		4	0	0	

APPENDIX B.

Wateree River Basin

Ambient Water Quality Monitoring Site Descriptions

Station #	Type	Class	Description
03050104-01			
CW-231	W/INT	FW	Lake Wateree headwaters, 50 yds ds of Cedar Creek confluence
CW-040	S/W	FW	Little Wateree Creek at S-20-41 5 mi E of Winnsboro
CW-072	W/INT	FW	Big Wateree Creek at US 21
CW-692	BIO	FW	Dutchmans Creek at S-20-21
CW-208	P/W	FW	Lake Wateree at S-20-101, 11 mi ENE of Winnsboro
RL-08035	RL08	FW	Lake Wateree, Dutchmans Creek arm, 0.4 mi E of S-20-101 bridge
RS-07059	RS-07/BIO	FW	Tranham Creek at S-29-763, 6.5mi WSW of Kershaw
CW-076	BIO	FW	Beaver Creek at S-28-13
CW-207	P/W	FW	Lake Wateree at end of S-20-291
CW-209	P/W	FW	Lake Wateree at small island 2.3 mi N of dam
CL-089	INT	FW	Lake Wateree in forebay equidistant from dam & shorelines
03050104-02			
CW-077	BIO	FW	Flat Rock Creek at S-28-40
CW-078	BIO	FW	Grannies Quarter Creek at S-28-58
CW-237	W/INT	FW	Grannies Quarter Creek at SC 97
RS-08073	RS08	FW	Unnamed Creek to Sawneys Creek at SC 34
CW-228	P/W/BIO	FW	Sawneys Creek at S-20-151
CW-079	W/INT	FW	Sawneys Creek at S-28-37
CW-710	BIO	FW	Sanders Creek at SC 97
CW-229	P/W	FW	Bear Creek at S-40-82
CW-080	S/INT/BIO	FW	Twentyfive Mile Creek at S-28-05 3.7 mi W of Camden
(CW-019)	S/W	FW	Wateree River at US 1
03050104-03			
CW-019	S/W	FW	Wateree River at US 1
CW-223	S/W/BIO	FW	Little Pine Tree Creek at S-28-132
CW-021	W/INT	FW	Big Pine Tree Creek at US 521, NW of Bridge
CW-082	INT	FW	Swift Creek at S-28-12
CW-238	W/INT	FW	Swift Creek at SC 261
03050104-04			
CW-154	S/W/BIO	FW	Kelly Creek at S-28-367 2.9 mi SE of Elgin
CW-155	P/W/BIO	FW	Spears Creek at SC 12 3.6 mi SE of Elgin
CW-166	W/INT	FW	Spears Creek at US 601
CW-250	INT	FW	Colonels Creek at SC 262
CW-240	W	FW	Colonels Creek at US 601
CW-206	P/SPRP	FW	Wateree River at US 76 & 378
CW-222/SC-002	P/INT	FW	Wateree River 1.6 mi upstream of confl. with Congaree River

Groundwater Monitoring Sites

Well #	Class	Aquifer	Location
03050104-01			
AMB-059	GB	Piedmont Bedrock	Lake Wateree State Park
03050104-02			
AMB-036	GB	Middendorf	Town of Elgin

Well #	Class	Aquifer	Location
03050104-03			
AMB-038	GB	MIDDENDORF	C. THOMPSON WATER DISTRICT
AMB-019	GB	BLACK CREEK	WATEREE CORRECTIONAL INST.
03050104-04			
AMB-018	GB	BLACK CREEK	OAKLAND PLANTATION
AMB-048	GB	MIDDENDORF	NORTH OF EASTOVER

For further details concerning sampling frequency and parameters sampled, please visit our website at www.scdhec.gov/eqc/admin/html/eqcpubs.html#wqreports for the current State of S.C. Monitoring Strategy.

Water Quality Data

Spreadsheet Legend

Station Information:

STATION NUMBER Station ID

TYPE SCDHEC station type code

P = Primary station, sampled monthly all year round

S = Secondary station, sampled monthly May - October

P* = Secondary station upgraded to primary station parameter coverage and sampling frequency for basin study

W = Special watershed station added for the Edisto River Basin study

BIO = Indicates macroinvertebrate community data assessed

INT = Integrator Station (approximates a Primary station)

RL = Random Lake station

RO = Random Open water station

RS = Random Stream station

RT = Random Tide Creek station

WATERBODY NAME Stream or Lake Name

CLASS Stream classification at the point where monitoring station is located

Parameter Abbreviations and Parameter Measurement Units:

DO	Dissolved Oxygen (mg/l)		
BOD	Five-Day Biochemical Oxygen Demand (mg/l)	**NH3**	Ammonia (mg/l)
pH	pH (SU)	**CD**	Cadmium (ug/l)
TP	Total Phosphorus (mg/l)	**CR**	Chromium (ug/l)
TN	Total Nitrogen (mg/l)	**CU**	Copper (ug/l)
TURB	Turbidity (NTU)	**PB**	Lead (ug/l)
TSS	Total Suspended Solids (mg/l)	**HG**	Mercury (ug/l)
BACT	Fecal Coliform Bacteria (#/100 ml)	**NI**	Nickel (ug/l)
		ZN	Zinc (ug/l)

Statistical Abbreviations:

N For *standards compliance*, number of surface samples collected between January 2002 and December 2006. For *trends*, number of surface samples collected between January 1992 and December 2006.

EXC. Number of samples contravening the appropriate standard

% Percentage of samples contravening the appropriate standard

MEAN EXC. Mean of samples that contravened the applied standard

MED For *heavy metals with a human health criterion*, this is the median of all surface samples between January 2002 and December 2006. DL indicates that the median was the detection limit.

MAG Magnitude of any statistically significant trend, average change per year, expressed in parameter measurement units

GEO MEAN Geometric mean of fecal coliform bacteria samples collected between January 2002 and December 2006

Key to Trends:

D Statistically significant decreasing trend in parameter concentration

I Statistically significant increasing trend in parameter concentration

***** No statistically significant trend

STATION				DO	DO	DO	MEAN	TRENDS (94-2008)					
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG
03050104-01													
CW-231	INT	LAKE WATEREE	FW	57	8	14	4.575	D	98	-0.125	I	86	0
CW-040	CS	LITTLE WATEREE CK	FW	9	0	0		NS	57	-0.022	NS	55	0.051
CW-072	INT	BIG WATEREE CK	FW	50	8	16	4.111	NS	82	-0.051	I	72	0.2
CW-208	CS	LAKE WATEREE	FW	12	0	0		I	108	0.06	NS	102	0
RL-08035	RL08	LAKE WATEREE	FW	12	0	0							
RS-07059	RS07	TRANHAM CK	FW	12	0	0							
CW-207	CS	LAKE WATEREE	FW	12	0	0		NS	108	0.05	NS	102	-0.008
CW-209	CS	LAKE WATEREE	FW	12	0	0		NS	108	-0.004	NS	101	-0.05
CL-089	INT	LAKE WATEREE	FW	54	8	15	3.825	NS	89	-0.054	I	76	0.183
03050104-02													
CW-237	INT	GRANNIES QUARTER CK	FW	60	0	0		NS	103	-0.036	I	87	0.317
RS-08073	RS08	SAWNEYS CK TRIB	FW	9	0	0							
CW-228	CS	SAWNEYS CK	FW	8	0	0		NS	101	0	NS	95	-0.02
CW-079	INT	SAWNEYS CK	FW	59	1	1.7	3.88	NS	97	-0.007	I	83	0.022
CW-229	CS	BEAR CK	FW	7	1	14	1.4	NS	94	-0.1	NS	87	0.035
CW-080	INT	TWENTYFIVE MILE CK	FW	60	3	5	3.75	D	133	-0.069	I	117	0.067
03050104-03													
CW-019/ RS-13156	CS	WATEREE RVR	FW	12	3	25	4.553	NS	64	-0.011	NS	63	0
CW-223	CS	LITTLE PINE TREE CK	FW	12	0	0		NS	64	-0.029	I	64	0.1
CW-021/ RS-09283	INT	BIG PINE TREE CK	FW	60	3	5	3.113	NS	103	0.003	I	87	0.38
CW-082	INT	SWIFT CK	FW	38	5	13	3.35	NS	38	-0.055			
CW-238	INAC	SWIFT CK	FW	12	5	42	1.022	NS	50	-0.035	I	50	0.22
03050104-04													
CW-154	CS	KELLY CK	FW	12	0	0		NS	63	-0.015	I	62	0.092
CW-155	CS	SPEARS CK	FW	12	0	0		NS	105	-0.013	I	104	0.073
CW-166	INT	SPEARS CK	FW	59	1	1.7	4.65	NS	101	-0.011	I	88	0.183
CW-250	INT	COLONELS CK	FW	60	2	3.3	4.275	NS	94	0.002	I	83	0.317
CW-240	CS	COLONELS CK	FW	12	0	0		D	32	-0.158	I	31	0.122
CW-206/ RS-08256	SPRP	WATEREE RVR	FW	60	3	5	4.657	I	177	0.04	NS	160	0
CW-222/ SC-002	INT	WATEREE RVR	FW	100	3	3	4.663	NS	165	-0.014	I	150	0.06

STATION				pH	pH	pH	MEAN	TRENDS (94-2008)			TURB	TURB	TURB	MEAN	TRENDS (94-2008)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	PH	N	MAG	N	EXC.	%	EXC.	TURB	N	MAG
03050104-01																	
CW-231	INT	LAKE WATEREE	FW	57	3	5.3	5.633	NS	98	0.025	57	6	10.53	30.333	D	98	-1
CW-040	CS	LITTLE WATEREE CK	FW	9	0	0		I	57	0.027	9	2	22.22	65	D	54	-0.5
CW-072	INT	BIG WATEREE CK	FW	50	0	0		D	83	-0.053	49	7	14.29	107.143	NS	84	0
CW-208	CS	LAKE WATEREE	FW	12	3	25	8.75	I	107	0.052	12	3	25	31.333	D	103	-0.333
RL-08035	RL08	LAKE WATEREE	FW	12	2	17	9.035				12	0	0				
RS-07059	RS07	TRANHAM CK	FW	12	0	0					12	0	0				
CW-207	CS	LAKE WATEREE	FW	12	1	8.3	8.72	I	107	0.062	12	0	0		D	105	-0.427
CW-209	CS	LAKE WATEREE	FW	12	2	17	8.865	I	107	0.06	12	1	8.333	39	D	104	-0.308
CL-089	INT	LAKE WATEREE	FW	55	12	22	8.901	NS	90	0.046	54	4	7.407	30.75	NS	88	0.067
03050104-02																	
CW-237	INT	GRANNIES QUARTER CK	FW	60	0	0		NS	103	-0.025	58	2	3.448	56	NS	99	-0.13
RS-08073	RS08	SAWNEYS CK TRIB	FW	9	0	0					9	0	0				
CW-228	CS	SAWNEYS CK	FW	8	0	0		NS	100	0.027	8	1	12.5	140	NS	98	-0.321
CW-079	INT	SAWNEYS CK	FW	59	0	0		NS	97	0.004	58	4	6.897	110.75	NS	96	0.08
CW-229	CS	BEAR CK	FW	7	0	0		I	94	0.036	7	1	14.29	57	NS	90	-0.147
CW-080	INT	TWENTYFIVE MILE CK	FW	60	0	0		NS	133	0.011	59	2	3.39	72.5	NS	131	0
03050104-03																	
CW-019/ RS-13156	CS	WATEREE RVR	FW	12	0	0		I	64	0.036	12	1	8.333	62	D	64	-0.968
CW-223	CS	LITTLE PINE TREE CK	FW	12	3	25	5.89	NS	64	-0.033	11	0	0		I	63	0.15
CW-021/ RS-09283	INT	BIG PINE TREE CK	FW	60	4	6.7	5.722	NS	103	0.02	58	0	0		NS	101	0.02
CW-082	INT	SWIFT CK	FW	38	38	100	4.929	NS	38	-0.105	36	0	0		I	36	0.4
CW-238	INAC	SWIFT CK	FW	12	9	75	5.544	I	50	0.117	12	1	8.333	69	NS	52	0.133
03050104-04																	
CW-154	CS	KELLY CK	FW	12	6	50	5.567	NS	63	0	12	0	0		NS	63	-0.061
CW-155	CS	SPEARS CK	FW	12	3	25	5.817	NS	105	0.001	12	0	0		NS	103	-0.024
CW-166	INT	SPEARS CK	FW	59	14	24	5.756	I	101	0.074	59	0	0		NS	102	0.043
CW-250	INT	COLONELS CK	FW	60	55	92	5.133	D	94	-0.166	60	0	0		NS	96	-0.045
CW-240	CS	COLONELS CK	FW	12	11	92	5.401	NS	32	0.011	12	0	0		NS	31	-0.072
CW-206/ RS-08256	SPRP	WATEREE RVR	FW	60	0	0		NS	177	0.013	60	1	1.667	54	D	175	-0.286
CW-222/ SC-002	INT	WATEREE RVR	FW	111	0	0		I	165	0.016	90	3	3.333	56.867	NS	165	-0.143

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	TP N	TP EXC.	TP %	MEAN EXC.	TRENDS (94-2008) TP	TRENDS (94-2008) N	TRENDS (94-2008) MAG	TN N	TN EXC.	TN %	MEAN EXC.	TRENDS (94-2008) TN	TRENDS (94-2008) N	TRENDS (94-2008) MAG
03050104-01																	
CW-231	INT	LAKE WATEREE	FW	57	46	81	0.606	D	86	-0.005	50	7	14	1.583	I	72	0.066
CW-040	CS	LITTLE WATEREE CK	FW					I	44	0.001							
CW-072	INT	BIG WATEREE CK	FW					NS	78	0.001					NS	49	0.007
CW-208	CS	LAKE WATEREE	FW	12	1	8	0.067	D	79	-0.004	9	0	0		NS	77	-0.003
RL-08035	RL08	LAKE WATEREE	FW	12	5	42	0.073				12	0	0				
RS-07059	RS07	TRANHAM CK	FW														
CW-207	CS	LAKE WATEREE	FW	12	1	8	0.25	D	80	-0.003	9	0	0		D	78	-0.015
CW-209	CS	LAKE WATEREE	FW	12	0	0		D	79	-0.003	10	0	0		D	75	-0.036
CL-089	INT	LAKE WATEREE	FW	54	6	11	0.076	D	78	-0.002	52	0	0		D	53	-0.051
03050104-02																	
CW-237	INT	GRANNIES QUARTER CK	FW					NS	90	0					NS	66	0.01
RS-08073	RS08	SAWNEYS CK TRIB	FW														
CW-228	CS	SAWNEYS CK	FW					NS	74	0					NS	57	0.007
CW-079	INT	SAWNEYS CK	FW					NS	88	0					NS	42	0.007
CW-229	CS	BEAR CK	FW					NS	66	0					NS	40	-0.028
CW-080	INT	TWENTYFIVE MILE CK	FW					NS	112	0					NS	78	-0.018
03050104-03																	
CW-019/ RS-13156	CS	WATEREE RVR	FW					NS	51	-0.001							
CW-223	CS	LITTLE PINE TREE CK	FW					NS	50	0							
CW-021/ RS-09283	INT	BIG PINE TREE CK	FW					NS	91	0					NS	75	0.006
CW-082	INT	SWIFT CK	FW					NS	38	0							
CW-238	INAC	SWIFT CK	FW					NS	41	0							
03050104-04																	
CW-154	CS	KELLY CK	FW					NS	50	0							
CW-155	CS	SPEARS CK	FW					NS	79	0					NS	89	0.007
CW-166	INT	SPEARS CK	FW					I	91	0.002					I	77	0.073
CW-250	INT	COLONELS CK	FW					I	84	0					NS	46	0.01
CW-240	CS	COLONELS CK	FW					NS	32	0							
CW-206/ RS-08256	SPRP	WATEREE RVR	FW					D	141	-0.003					D	153	-0.013
CW-222/ SC-002	INT	WATEREE RVR	FW					D	131	-0.002	17	0	0		NS	146	0

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CHL N	CHL EXC.	CHL %	MEAN EXC.	TRENDS (94-2008) TSS	TRENDS (94-2008) N	TRENDS (94-2008) MAG
03050104-01										
CW-231	INT	LAKE WATEREE	FW	28	0	0		D	75	-1.25
CW-040	CS	LITTLE WATEREE CK	FW							
CW-072	INT	BIG WATEREE CK	FW							
CW-208	CS	LAKE WATEREE	FW	6	1	16.7	50.8	NS	98	0.082
RL-08035	RL08	LAKE WATEREE	FW	5	0	0				
RS-07059	RS07	TRANHAM CK	FW							
CW-207	CS	LAKE WATEREE	FW	6	0	0		NS	100	0
CW-209	CS	LAKE WATEREE	FW	6	0	0		D	99	-0.1
CL-089	INT	LAKE WATEREE	FW	29	1	3.45	40.987			
03050104-02										
CW-237	INT	GRANNIES QUARTER CK	FW							
RS-08073	RS08	SAWNEYS CK TRIB	FW							
CW-228	CS	SAWNEYS CK	FW							
CW-079	INT	SAWNEYS CK	FW							
CW-229	CS	BEAR CK	FW							
CW-080	INT	TWENTYFIVE MILE CK	FW							
03050104-03										
CW-019/ RS-13156	CS	WATEREE RVR	FW							
CW-223	CS	LITTLE PINE TREE CK	FW							
CW-021/ RS-09283	INT	BIG PINE TREE CK	FW							
CW-082	INT	SWIFT CK	FW							
CW-238	INAC	SWIFT CK	FW							
03050104-04										
CW-154	CS	KELLY CK	FW							
CW-155	CS	SPEARS CK	FW							
CW-166	INT	SPEARS CK	FW							
CW-250	INT	COLONELS CK	FW							
CW-240	CS	COLONELS CK	FW							
CW-206/ RS-08256	SPRP	WATEREE RVR	FW					D	155	-0.25
CW-222/ SC-002	INT	WATEREE RVR	FW					D	149	-0.5

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS (94-2008) BACT	N	MAG
03050104-01											
CW-231	INT	LAKE WATEREE	FW	19	56	0	0		NS	96	-1
CW-040	CS	LITTLE WATEREE CK	FW	84	9	1	11.11	860	NS	56	-8.3
CW-072	INT	BIG WATEREE CK	FW	277	50	14	28	1237.143	D	84	-25
CW-208	CS	LAKE WATEREE	FW	5	12	0	0		NS	94	-0.155
RL-08035	RL08	LAKE WATEREE	FW	7	12	0	0				
RS-07059	RS07	TRANHAM CK	FW	182	12	2	16.67	835			
CW-207	CS	LAKE WATEREE	FW	7	12	0	0		D	92	-0.333
CW-209	CS	LAKE WATEREE	FW	3	12	0	0		D	94	-0.25
CL-089	INT	LAKE WATEREE	FW	3	55	0	0		NS	79	0
03050104-02											
CW-237	INT	GRANNIES QUARTER CK	FW	320	60	22	36.67	906.818	NS	101	0.833
RS-08073	RS08	SAWNEYS CK TRIB	FW	230	9	3	33.33	796.667			
CW-228	CS	SAWNEYS CK	FW	391	8	4	50	1337.5	I	96	20
CW-079	INT	SAWNEYS CK	FW	316	59	17	28.81	2656.471	NS	97	5
CW-229	CS	BEAR CK	FW	358	7	2	28.57	765	NS	91	-3.333
CW-080	INT	TWENTYFIVE MILE CK	FW	237	60	15	25	854.667	NS	133	1.667
03050104-03											
CW-019/ RS-13156	CS	WATEREE RVR	FW	57	12	0	0		D	64	-4
CW-223	CS	LITTLE PINE TREE CK	FW	316	12	6	50	676.667	I	64	15
CW-021/ RS-09283	INT	BIG PINE TREE CK	FW	63	60	2	3.333	1850	NS	103	-0.2
CW-082	INT	SWIFT CK	FW	67	38	3	7.895	593.333	NS	38	0
CW-238	INAC	SWIFT CK	FW	10	12	0	0		NS	48	0
03050104-04											
CW-154	CS	KELLY CK	FW	92	32	1	3.125	410	NS	67	0
CW-155	CS	SPEARS CK	FW	131	12	2	16.67	920	I	105	5
CW-166	INT	SPEARS CK	FW	175	60	15	25	846	NS	104	-5
CW-250	INT	COLONELS CK	FW	48	60	0	0		NS	96	-2.167
CW-240	CS	COLONELS CK	FW	4	12	0	0		NS	31	-0.722
CW-206/ RS-08256	SPRP	WATEREE RVR	FW	38	60	1	1.667	1300	NS	177	-0.268
CW-222/ SC-002	INT	WATEREE RVR	FW	27	85	0	0		D	166	-1

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD %	MEAN EXC.	CR N	CR EXC.	CR %	MEAN EXC.	CU N	CU EXC.	CU %	MEAN EXC.
03050104-01															
CW-231	INT	LAKE WATEREE	FW	12	0	0		12	0	0		12	0	0	
CW-040	CS	LITTLE WATEREE CK	FW	3	1	33	11	3	0	0		3	1	33	12
CW-072	INT	BIG WATEREE CK	FW	10	0	0		10	0	0		10	1	10	88
CW-208	CS	LAKE WATEREE	FW	4	0	0		4	0	0		4	1	25	11
RL-08035	RL08	LAKE WATEREE	FW	4	0	0		4	0	0		4	0	0	
RS-07059	RS07	TRANHAM CK	FW	4	0	0		4	0	0		4	0	0	
CW-207	CS	LAKE WATEREE	FW	4	0	0		4	0	0		4	0	0	
CW-209	CS	LAKE WATEREE	FW	4	0	0		4	0	0		4	0	0	
CL-089	INT	LAKE WATEREE	FW	11	0	0		11	0	0		11	0	0	
03050104-02															
CW-237	INT	GRANNIES QUARTER CK	FW	12	0	0		12	0	0		12	0	0	
RS-08073	RS08	SAWNEYS CK TRIB	FW	4	0	0		4	0	0		4	0	0	
CW-228	CS	SAWNEYS CK	FW	3	0	0		3	0	0		3	1	33	12
CW-079	INT	SAWNEYS CK	FW	13	0	0		13	0	0		13	0	0	
CW-229	CS	BEAR CK	FW	2	0	0		2	0	0		2	0	0	
CW-080	INT	TWENTYFIVE MILE CK	FW	12	0	0		12	1	8.3	120	12	1	8.3	11
03050104-03															
CW-019/ RS-13156	CS	WATEREE RVR	FW	4	0	0		4	0	0		4	0	0	
CW-223	CS	LITTLE PINE TREE CK	FW	4	0	0		4	0	0		4	1	25	30
CW-021/ RS-09283	INT	BIG PINE TREE CK	FW	12	0	0		12	0	0		12	0	0	
CW-082	INT	SWIFT CK	FW	9	0	0		9	0	0		9	0	0	
CW-238	INAC	SWIFT CK	FW												
03050104-04															
CW-154	CS	KELLY CK	FW	4	0	0		4	0	0		4	0	0	
CW-155	CS	SPEARS CK	FW	4	0	0		4	0	0		4	0	0	
CW-166	INT	SPEARS CK	FW	12	0	0		12	0	0		12	0	0	
CW-250	INT	COLONELS CK	FW	11	1	9.1	20	11	0	0		11	1	9.1	29
CW-240	CS	COLONELS CK	FW	4	0	0		4	0	0		4	0	0	
CW-206/ RS-08256	SPRP	WATEREE RVR	FW	11	0	0		11	0	0		11	0	0	
CW-222/ SC-002	INT	WATEREE RVR	FW	39	0	0		40	0	0		40	0	0	

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	PB N	PB EXC.	PB %	MEAN EXC.	HG N	HG EXC.	HG %	MEAN EXC.	NI N	NI EXC.	NI %	MEAN EXC.	ZN N	ZN EXC.	ZN %	MEAN EXC.
03050104-01																			
CW-231	INT	LAKE WATEREE	FW	12	0	0		12	0	0		12	0	0		12	1	8.3	89
CW-040	CS	LITTLE WATEREE CK	FW	3	0	0		3	0	0		3	0	0		3	2	67	196.5
CW-072	INT	BIG WATEREE CK	FW	10	0	0		10	0	0		10	0	0		10	0	0	
CW-208	CS	LAKE WATEREE	FW	4	0	0		4	0	0		4	0	0		4	0	0	
RL-08035	RL08	LAKE WATEREE	FW	4	0	0		4	0	0		4	0	0		4	0	0	
RS-07059	RS07	TRANHAM CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-207	CS	LAKE WATEREE	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-209	CS	LAKE WATEREE	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CL-089	INT	LAKE WATEREE	FW	11	0	0		11	0	0		11	0	0		11	0	0	
03050104-02																			
CW-237	INT	GRANNIES QUARTER CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
RS-08073	RS08	SAWNEYS CK TRIB	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-228	CS	SAWNEYS CK	FW	3	0	0		3	0	0		3	0	0		3	0	0	
CW-079	INT	SAWNEYS CK	FW	13	0	0		13	0	0		13	0	0		13	0	0	
CW-229	CS	BEAR CK	FW	2	0	0		2	0	0		2	0	0		2	0	0	
CW-080	INT	TWENTYFIVE MILE CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
03050104-03																			
CW-019/ RS-13156	CS	WATEREE RVR	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-223	CS	LITTLE PINE TREE CK	FW	4	0	0		4	0	0		4	0	0		4	1	25	340
CW-021/ RS-09283	INT	BIG PINE TREE CK	FW	12	0	0		12	0	0		12	0	0		12	0	0	
CW-082	INT	SWIFT CK	FW	9	0	0		9	0	0		9	0	0		9	0	0	
CW-238	INAC	SWIFT CK	FW																
03050104-04																			
CW-154	CS	KELLY CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-155	CS	SPEARS CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-166	INT	SPEARS CK	FW	12	0	0		12	0	0		12	0	0		12	1	8.3	94
CW-250	INT	COLONELS CK	FW	11	0	0		11	0	0		11	1	9	24	11	1	9.1	88
CW-240	CS	COLONELS CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CW-206/ RS-08256	SPRP	WATEREE RVR	FW	11	0	0		11	0	0		11	0	0		11	0	0	
CW-222/ SC-002	INT	WATEREE RVR	FW	40	0	0		11	0	0		40	0	0		37	0	0	

APPENDIX C.

Waterbody Index

Waterbody Index

APPENDIX D.

Monitoring Station/Well Index

Water Quality Monitoring Station/Well Index

SURFACE WATER QUALITY MONITORING STATIONS

AMBIENT GROUNDWATER QUALITY MONITORING WELLS

APPENDIX E.

Facility Index

Facility Index

APPENDIX F.

Facility Permit Number Index

Facility Permit Number Index

General Permits (continued)

SCG730550, 103
SCG730551, 119
SCG730566, 50
SCG730575, 119
SCG730587, 83
SCG730591, 43
SCG730592, 68
SCG730605, 111
SCG730606, 111
SCG730608, 119
SCG730633, 68
SCG730641, 57
SCG730642, 83
SCG730652, 68
SCG730658, 75
SCG730702, 119
SCG730994, 68
SCG730998, 68
SCG731072, 103
SCG731114, 51
SCG731119, 75
SCG731164, 111
SCG731175, 83
SCG731214, 68
SCG750033, 61

Land Applications

ND0001546, 105
ND0061735, 112
ND0067008, 105
ND0067105, 52
ND0067598, 121
ND0068411, 121
ND0069582, 105
ND0069655, 112
ND0069868, 112
ND0075272, 112

Mining

0003-57, 57
0089-55, 121
0104-91, 70
0121-55, 112
0137-55, 121
0178-23, 70
0336-39, 97
0403-79, 105
0404-55, 105
0405-57, 97
0409-55, 121
0487-55, 105
0492-55, 121
0507-79, 121
0556-55, 97
0582-85, 121
0592-55, 105
0700-79, 121
0778-57, 84
0808-57, 52
0830-55, 121
0898-79, 121
0926-91, 44
0995-55, 113
1094-91, 52
1096-91, 70
1112-91, 71
1115-55, 121
1221-91, 84
1239-55, 121
1265-91, 70
1275-91, 71
1276-79, 121
1279-91, 71
1298-55, 113
1345-91, 44
1370-79, 122
1392-91, 52
1417-79, 105
1432-55, 122
1546-55, 105
1567-23, 76

Natural Swimming Areas

20-1002N, 96
20-N01, 103
28-N01, 110
43-N01, 117
46-N17, 43

Landfills

121001-1101, 76
121001-3001, 76
121001-6001, 76
121002-1201, 83
121002-1701, 84
121002-3001, 84
121003-1201, 76
122901-1301, 70
123301-1601, 75
123331-3001, 76

Landfills (continued)

281001-1101, 112
281001-1201, 111
281001-3001, 111
282401-1201, 120
282428-1201, 120
282428-3001, 120
282443-3001, 104
282618-1701, 112
283316-1601, 104
291001-1703, 84
291001-3001, 84
291003-6001, 84
291004-1301, 51
292414-5201, 61
292625-3001, 52
292642-3001, 62
292648-1301, 62
292655-4001, 52
292657-1901, 62
292684-8001, 62
292900-1301, 57
292902-1301, 57
292903-1301, 84
293314-1201, 62
402400-3001, 120
402401-1101, 120
402423-1201, 120
402428-1701, 120
402434-1101, 120
402446-1601, 120
402462-1701, 104
403313-1601, 120
403323-1101, 120
461001-1101, 69
461001-1102, 69
461001-1201, 69
461001-3001, 69
461001-5201, 69
461001-6001, 69
461002-1201, 69
461002-1202, 70
461002-1702, 69
461002-3001, 69
461002-3002, 69
461003-3001, 52
461006-3001, 70
462424-1201, 70
462424-1601, 70
462425-1201, 51
462427-1201, 69
462436-1201, 44
462452-1301, 70
462452-1701, 70
462497-3001, 44
462497-3002, 44
462602-1201, 51
462620-1701, 70
462636-3001, 69
462655-3001, 51
462672-1701, 44
462672-3001, 44
462724-7301, 70
462748-1701, 84
462751-3001, 70
462774-1201, 70
463303-1601, 44
463312-1601, 84
463312-1602, 84
463318-1601, 84
463323-6001, 51

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