



SOUTH CAROLINA

NONPOINT SOURCE MANAGEMENT PROGRAM ANNUAL REPORT

FISCAL YEAR 2019

South Carolina Department of Health and Environmental Control



[This page intentionally left blank.]

TABLE OF CONTENTS

I. NONPOINT SOURCE POLLUTION	1
II. HISTORY OF SC’S NONPOINT SOURCE MANAGEMENT PROGRAM	1
III. THE 303(D) LIST.....	2
IV. TMDL – A TOOL FOR WATER QUALITY IMPROVEMENT.....	2
V. SOUTH CAROLINA’S STRATEGY	3
VI. 2015-2019 NONPOINT SOURCE PROGRAM VISION AND GOALS	7
VII. MEETING THE OBJECTIVES OF THE NPS PROGRAM	8
VIII. RELATING PROGRESS TO EPA’S STRATEGIC PLAN	18
IX. EPA NPS SUCCESS STORY	22
X. WBP IMPLEMENTATION – PROJECTS COMPLETED IN FY19	24
RICHLAND CREEK	24
CONGAREE CREEK – PHASE I	24
MAY RIVER – PHASE III	25
XI. WBP IMPLEMENTATION – PROJECTS ONGOING IN FY19.....	26
GILLS CREEK.....	26
SHAWS CREEK – AGRICULTURE	28
TWENTY-FIVE MILE CREEK (KERSHAW COUNTY)	28
MITCHELL SWAMP OUT OF LORIS	29
LITTLE PEE DEE/CHINNERS SWAMP	30
EVERGREEN TRACT	31
HYATT PARK.....	32
EARLEWOOD PARK	33
TYGER RIVER SUBWATERSHEDS.....	34
MORSE PARK	35
HOG INLET.....	36
SHAWS CREEK – LAND CONSERVATION.....	37
XII. WBP IMPLEMENTATION – PROJECTS BEGINNING IN FY19	38
KINGSTON LAKE WITH CRABTREE.....	38
CONGAREE CREEK – PHASE II	38
NORTH SALUDA RIVER	38
MAY RIVER – PHASE IV.....	38
XIII. SOUTH CAROLINA COASTAL NONPOINT SOURCE PROGRAM	39
XIV. SOUTH CAROLINA FORESTRY COMMISSION BMP COMPLIANCE PROGRAM	40
XV. CHAMPIONS OF THE ENVIRONMENT PROGRAM	41
XVI. PROGRAM CONTACTS	42

I. NONPOINT SOURCE POLLUTION

Nonpoint source pollution occurs when rainfall or irrigation runs over land or percolates through the ground, picking up pollutants and carrying them into rivers, lakes, coastal waters, and ground waters. Unlike point source pollution, which can be traced to a defined source, nonpoint source pollution is diffuse, making it difficult to identify and control its source.

Nonpoint sources of pollution are important to control because they are continuously recognized as the nation's largest cause of surface water quality impairments. NPS pollution may contain bacteria and nutrients from malfunctioning septic systems or animal waste, eroded soil from land disturbances, nutrients and pesticides from agricultural or urban areas, air pollutants from atmospheric deposition, and heavy metals and other toxins bound to soil particles. These pollutants can impact human and aquatic health, effect aquatic and marine habitat, and make drinking water more difficult to treat.

The most common measured NPS pollutant in South Carolina is *E.coli* bacteria. Other common examples include nutrients such as phosphorus and nitrogen, pesticides, oil and grease, toxic chemicals, and heavy metals. These pollutants most often wash into waterbodies in sediments from agricultural land, small- and medium-sized animal feeding operations, construction sites, and other areas of disturbance. Other major sources of these pollutants are found in urban areas, including runoff from parking lots, storm drains, and roads.

II. HISTORY OF SC'S NONPOINT SOURCE MANAGEMENT PROGRAM

Recognizing the growing problem of NPS pollution, in 1987, Congress added nonpoint source provisions to the Clean Water Act (CWA) under Section 319. Among other provisions, Section 319 requires each state to develop and maintain a Nonpoint Source Management Program to comprehensively address nonpoint sources of pollution. Contingent on EPA's approval of the State's NPS Management Plan, Section 319 also provides grants to states for implementing NPS best management practices (BMPs).

The Nonpoint Source Management Plan has been prepared in accordance with Federal and State regulations and was originally approved by EPA in 1990. DHEC has statutory authority to enforce the Nonpoint Source Management Program provisions of 33 U.S. Code § 1329 through the SC Pollution Control Act, S.C. Code Ann. § 48-1-10, and the regulations and permitting programs promulgated pursuant to the Pollution Control Act. Additionally, the South Carolina Coastal Zone Management Act of 1977, S.C. Code Ann. § 48-39-10, provides additional authority in the coastal counties of the State. South Carolina received full coastal program approval by EPA in 2008. Since the original South Carolina NPS Program was developed, the Nonpoint Source Management Plan has been updated three times, most recently for 2020-2024.

III. THE 303(D) LIST

Section 303(d) of the Clean Water Act mandates that every two years each state must compile a list of waters that do not meet water quality standards and place them on the 303(d) list.

Waters can be impaired for a variety of causes including, but not limited to, bacteria, phosphorus, heavy metals, etc. Sources of these impairments vary with land uses, such as urban, rural, or agricultural. Once a waterbody is on the 303(d) list, it is targeted for water quality improvement. Local stakeholders are often eligible for grants for improvement projects through SCDHEC. The implementation projects listed in this report are funded in such a manner through Section 319 of the Clean Water Act. Impaired waters can be removed from the 303(d) list either through the development of a TMDL or SCDHEC monitoring that shows water quality has improved so that it meets the standard for the designated use of a waterbody.

IV. TMDL – A TOOL FOR WATER QUALITY IMPROVEMENT

The passage of the Federal Clean Water Act laid the groundwork for improving water quality in the nation's waterbodies. An important part of that groundwork is contained in Section 303(d) of the Act, which requires that states compile lists of waterbodies that are not meeting water quality standards. Once on the list, a Total Maximum Daily Load (TMDL) must be developed for each impaired waterbody.

A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. TMDLs for a waterbody are calculated based on point source wasteload allocations (industrial discharges, wastewater treatment discharges, municipal stormwater discharges, etc.), nonpoint sources (pollutants from runoff), natural background sources such as wildlife, and a margin of safety. TMDLs are developed for each pollutant causing impairment to a waterbody. Therefore, a waterbody may have multiple TMDLs if it is impaired by more than one pollutant.

In South Carolina, the overwhelming majority of impairments to surface waters, as included on the 303(d) list, are due to bacterial pathogens. These are almost invariably due to nonpoint sources since all point source dischargers are required to disinfect their effluent. The development of a TMDL involves an assessment to determine the characteristics of the impairment under conditions when exceedances of the water quality standard occur during common weather conditions such as after rain events, under low flow conditions, or during droughts or periods of extended hot weather. For pathogen-impaired waters, the sources are typically failing septic systems, cattle with access to streams, runoff from improperly applied manure, leaking or over-flowing sanitary sewers, and runoff from urbanized land. A computer model or another method, such as load-duration curves, is used to determine the existing load of pollutant and the Load Allocation (LA), or quantity of pollutant allowed from nonpoint sources for the TMDL.

Before it is submitted to EPA for approval, the public is given an opportunity to comment on the TMDL. The TMDL document is posted on SCDHEC's site (www.scdhec.gov) and the public is notified of its availability through email and legal notice in a local newspaper. After the public notice period, the TMDL

is submitted to EPA for review and approval. **South Carolina currently has 107 approved TMDL documents, covering 644 monitoring stations (mostly for pathogens). There is currently one alternative restoration plan in place to address one impaired location in the Savannah River. In addition, there are 4 TMDL documents or alternative restoration plans under development to address 78 impairments statewide.**

An approved TMDL also establishes the available wasteload allocations for point sources. Permits for National Pollutant Discharge Elimination System (NPDES) facilities (point sources) and NPDES stormwater permits must be consistent with any applicable TMDLs. Generally, SCDHEC does not have regulatory authority over the control of nonpoint sources. Rather, control of nonpoint sources is encouraged by using 319 grants, USDA cost share programs, CDBG block grants, or other state or federal programs to encourage landowners, farmers, and interested citizens to voluntarily work to improve the water quality.

Once the TMDL has been developed, the next step is implementation. At this point, the TMDL can be used to help formulate a strategy to reduce the pollutant loading through best management practices (BMPs) and stream restoration projects in the watershed. It is important to note that watershed stakeholders play a major role in realizing source reductions as implementation projects are underway.

V. SOUTH CAROLINA'S STRATEGY

South Carolina is taking full advantage of Clean Water Act Section 319 funding that is available from EPA to prevent and reduce NPS water pollution in the state. The annual grant funds and resultant workplan is the principal financial mechanism for implementing the goals of the NPS Management Program. All projects described in the workplan are linked to one or more of the goals described in the 2015 NPS Management Plan. To meet the goals of the 2015 NPS Management Plan, emphasis has shifted over the last several years toward implementing projects that address specific NPS-affected impairments in priority waterbodies/watersheds. Beginning in fiscal year 2003, in accordance with federal guidelines, South Carolina began focusing resources exclusively on implementation of watershed-based plans. Beginning in 2013, federal guidelines placed an even greater emphasis on watershed-based plan implementation. In 2019, South Carolina awarded three watershed-based plan development projects through a Drinking Water State Revolving Fund set-aside. The development of additional watershed-based plans increases the pool of watersheds eligible for implementation funds.

While Section 319 grant funds provide significant financial resources for implementing the NPS Management Program, the Program is much broader in scope. There are a variety of other programs including enforceable mechanisms that are applied to NPS pollution prevention. Within SCDHEC, several regulatory programs are administered including agricultural animal facility permitting and compliance, erosion and sediment control permitting and compliance, municipal and industrial facility NPDES stormwater permitting, coastal zone permitting, state water quality standards and Pollution Control Act compliance, Section 401 certification for wetlands disturbance and hydrologic modification, and onsite wastewater system standards and permitting. Further, the SC Forestry Commission implements a very successful Forestry Best Management Practice (BMP) compliance program. Since its inception in the early 1990's, the rate of compliance has increased significantly (see "SC Forestry Commission BMP Compliance Program Annual Update" to learn more).

Another significant source of funding for nonpoint source abatement projects is a state and federally supported low interest loan program known as the State Revolving Fund (SRF). Pursuing a 319 grant and SRF loan can be part of a larger strategy for municipalities seeking large-budget capital improvements affecting water quality. SRF offers a reduced interest rate category for nonpoint source projects in which at least 50% of the costs are used for BMPs. SRF projects that complement 319 efforts are awarded additional points in the Priority Ranking System that is used to select projects for SRF loans.

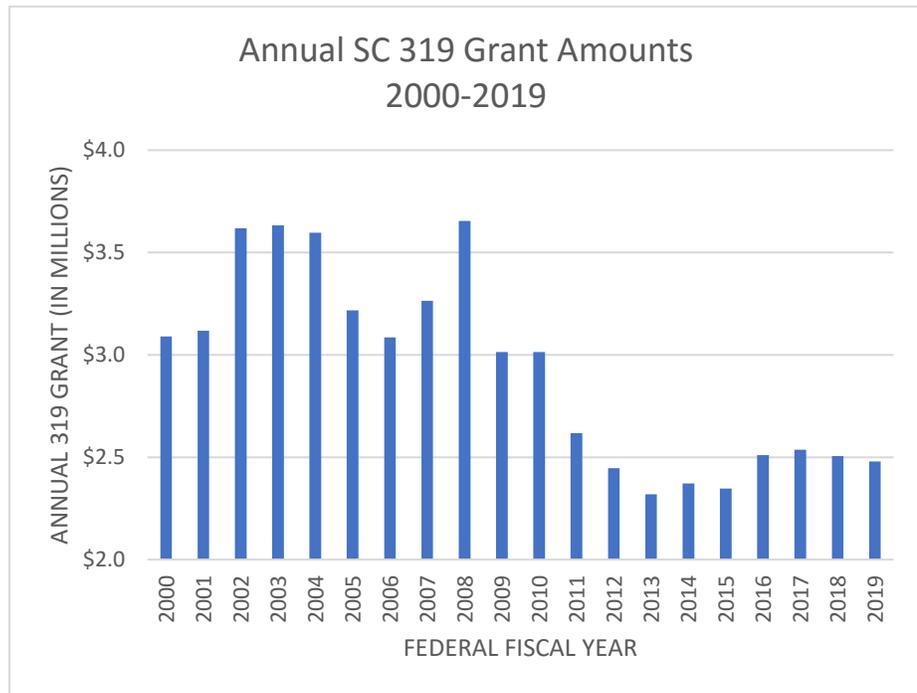
A small portion of the Drinking Water SRF can also be used to fund technical assistance and water-quality improvement efforts. Of these funds, \$100,000 or more is set aside for the development of watershed-based plans. These watershed-based plans address nonpoint source pollution affecting surface drinking water sources. This Source Water Protection Set-Aside is an important source of funds to increase watershed-based plan coverage throughout the State. Once these plans are completed, they are eligible for implementation with 319 funds.

The 1999 update to the NPS Management Plan incorporated South Carolina's Coastal Nonpoint Pollution Control Program (CNPCP) under Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA). The purpose of the CNPCP is to address nonpoint source pollution issues within the coastal zone and ensure that all applicable management measures are implemented to protect and restore the State's coastal resources. SCDHEC's Office of Ocean and Coastal Resource Management (OCRM) prepared a 15-year strategy for the CNPCP, which describes general objectives for the comprehensive and effective management of polluted runoff within the coastal zone. South Carolina received final program approval by the National Oceanic and Atmospheric Administration (NOAA) and EPA in 2008.

Stakeholders play an integral part in the State's NPS strategy. Federal agencies such as the USDA Natural Resources Conservation Service (NRCS), Farm Service Agency (FSA), US Forest Service (USFS), US Army Corps of Engineers (USACOE), and United States Geological Survey (USGS) have major roles. State agencies with complementary programs include the Department of Natural Resources, Clemson Extension Service, and the Forestry Commission. Nonprofit groups such as the SC Wildlife Federation, Save Our Saluda, SC Coastal Conservation League, and Upstate Forever, as well as industry trade organizations including the Farm Bureau, SC Association of Conservation Districts, Cattlemen's Association, and the Forestry Association are also active participants. Private utilities and industries can be excellent partners as well.

South Carolina's fiscal year 2019 Section 319 grant workplan for EPA contains projects funded under two different EPA defined categories: program and project. The program allocation is used to implement projects that address general NPS pollution activities that are statewide, while the project allocation is targeted for on-the-ground implementation of nonpoint source best management practices prescribed in approved watershed-based plans. SC's workplan specifically describes the programs and projects which receive funding from the EPA 319 grant to the State. However, in addition to these activities, other NPS activities are planned and on-going in accordance with SC's 2015-2019 NPS Management Plan for this year. The 5-Year Management Plan outlines all of the State's NPS Program efforts, and the 2019 annual workplan for EPA will only address activities funded by EPA.

The graph (right) shows SC 319 Grant Amounts from federal fiscal years 2000-2019. In 2013, the 319-grant amount was cut by over 5%, and the grant amounts have remained relatively low since. Decreases in the 319 budget can impact the program’s ability to address nonpoint source concerns, both through DHEC staff availability and through awarding grants for implementation projects. However, SC’s NPS Program is encouraged by both the increase in the FY16-19 budgets compared to FY13-15 and the relative steadiness of the FY16-19 budgets. A steady or increasing budget can help the SC NPS Program continue its work in the long term.



Cooperating agencies and organizations throughout the state have become highly involved in the watershed-based plan implementation process. One or several can jointly implement a plan in a given watershed using Section 319 funds. Projects to be implemented by outside agencies and organizations are selected using a competitive proposal process. A Request for Proposals (RFP) is promulgated at least once per year through various meetings, mailings, and the SCDHEC website.

Applicants must follow specific guidelines, which are published on the SCDHEC website (www.scdhec.gov) and detailed in the RFP to develop a proposal. The proposed project can implement a watershed-based plan for an approved TMDL or an impaired or threatened waterbody, or for the protection and preservation of unimpaired waterbodies; the objective must be to reduce the pollutant load so streams in the watershed meet water quality standards. SCDHEC guidelines stipulate that the project must address the nine elements of a well-designed watershed implementation project as specified by EPA.

Proposals received as a result of an RFP are reviewed and selected by a review committee. A proposed project must meet all the criteria described above to be selected for funding, and the federal funds must be matched with at least 40 percent in non-federal funds. South Carolina encourages combining federal funds from other sources such as the United States Department of Agriculture’s Environmental Quality Incentives Program (USDA EQIP) funds, although federal funds cannot be used as the required 40-percent match.

NPS program fund allocation projects are statewide or regional in scope and continue to institutionalize the State’s nonpoint source program. Many of these projects address various nonpoint source categories including forestry, urban runoff, animal agriculture, wetlands, construction, and groundwater impacts.

Annual program allocation projects are implemented by SCDHEC staff and the SC Forestry Commission. A significant portion of the annual allocation is used for NPS administration, education and outreach, NPS monitoring, and watershed management and compliance. It is also used to continue implementation of a statewide forestry BMP compliance program.

VI. 2015-2019 NONPOINT SOURCE PROGRAM VISION AND GOALS

VISION

The SC Nonpoint Source Program aims to control nonpoint sources of pollution in order to help restore and maintain high quality fishable, swimmable, and drinkable waters throughout the State.

DHEC established the following six long-term goals which drove the NPS Program for the 2015-2019 period. In order to quantitatively measure progress towards these goals, 15 objectives with 60 measurable

milestones were also developed that further defined the direction and activities related to achieving the intent of each goal. The objectives and milestones for FY2019 are detailed on the next page.

GOALS:

- 1. ASSESS, PRIORITIZE AND DEVELOP PLANS FOR WATERSHEDS AFFECTED BY NONPOINT SOURCE POLLUTION**
DHEC will continue to gather and use credible data to accurately identify those waters of the state whose designated uses are impaired by or need protection from nonpoint source pollution. The Department will prioritize watersheds for protection and water quality improvement activities and will continue to work with local stakeholders to develop comprehensive plans to address priority watersheds.
- 2. PROVIDE TECHNICAL ASSISTANCE TO EFFECTIVELY ADDRESS NPS POLLUTION**
DHEC will continue to provide technical assistance to implement efficient and effective watershed protection and improvement projects to reduce nonpoint sources of pollution.
- 3. STRENGTHEN PARTNERSHIPS AND COLLABORATIVE EFFORTS TO ADDRESS NPS POLLUTION**
DHEC will work to maintain and improve existing partnerships and develop new partnerships with other agencies, non-profit organizations and local watershed groups with complementary goals that also seek to reduce nonpoint source pollution and improve water quality.
- 4. PROVIDE ADEQUATE FUNDING FOR NPS PROJECTS AND PROGRAMS**
DHEC will continue to financially support and work to leverage additional resources for assessment, prioritization, planning, implementation and evaluation activities to strategically and efficiently reduce nonpoint sources of pollution.
- 5. PROVIDE TECHNICAL ASSISTANCE TO EFFECTIVELY ADDRESS NPS POLLUTION**
DHEC will develop and implement methods to accurately and efficiently track progress in achieving water quality improvements from best management practice implementation.
- 6. PROVIDE TECHNICAL ASSISTANCE TO EFFECTIVELY ADDRESS NPS POLLUTION**
DHEC will administer its Nonpoint Source Program efficiently and effectively with a focus on strengthening intra-agency coordination, demonstrating accountability, and systematically evaluating program outcomes.

VII. MEETING THE OBJECTIVES OF THE NPS PROGRAM

The SC NPS Management Program 5-Year Management Plan describes multiple long-term goals, milestones, and measures that facilitate and promote the state’s efforts to manage NPS water pollution. They are as follows, with corresponding FY 2019 objectives met. *Objective, milestone, and measure numbering correspond to the current year (FY 2019), which is year 5 of the 2015-2019 South Carolina NPS Management Plan.*

YEAR 5 MEASURES 2019			
Objective	Milestone	Measure	Objectives Met
1. ACCURATELY IDENTIFY WATERBODIES AFFECTED BY NONPOINT SOURCE POLLUTION	1. Assess statewide water quality through consistent monitoring	a) Collect and analyze monthly samples at 45 sites for probabilistic monitoring program	Samples from approximately 90 sites across the state were collected and analyzed monthly in 2019.
		b) Collect and analyze bi-monthly samples at 120 base sites for routine monitoring	Samples from approximately 244 base sites across the state were collected and analyzed monthly in 2019.
		c) Perform macroinvertebrate assessments statewide, typically 18 sites per year depending on hydrology	Macroinvertebrate assessments were performed at 53 regular trend sites across the state in 2019.
		d) Measure chlorophyll-a levels at 17 sites monthly and 12 sites bi-monthly from May through October	Chlorophyll-a levels were measured at approximately 97 sites monthly from May to October across the state. Chlorophyll-a levels were measured bimonthly at 9 sites from May to October.
	2. Develop, maintain and distribute South Carolina’s Integrated Report including Part 1: 303(d) List of Impaired Waters and Part 2: Section 305(b) Assessment and Reporting	d) Prepare ADB-compatible spreadsheet and GIS data files associated with 303(d) list and deliver to EPA	An ADB-compatible spreadsheet and GIS data files associated with the 303(d) list were prepared and delivered to EPA.
4. Implement and update sanitary surveys based on	a) Collect monthly water quality samples at 405 sites to be used to establish shellfish classifications	Monthly water quality samples were collected at 465 sites. ¹	

4a¹<http://www.scdhec.gov/FoodSafety/ShellfishMonitoring/MonitoringProgramOverview/>

	coastal water quality monitoring data	b) Perform sanitary surveys, identify needed corrective actions, and develop shellfish harvesting classifications in 25 shellfish growing areas	Sanitary surveys were completed, needed corrective actions were identified, and shellfish harvesting classifications were developed in 25 shellfish growing areas. ²
2. BETTER TARGET NPS PROGRAM RESOURCES TO ADDRESS WATERSHEDS IMPAIRED BY NPS POLLUTION	6. Work with watershed partners to develop watershed-based plans for new priority watersheds	a) Annually develop watershed-based plans in at least 1 newly identified priority watershed	In 2019, 1 project began to develop a watershed-based plan to address turbidity and aquatic life use in the Saluda River Basin, particularly for the Middle Saluda River, Upper South Saluda River, Oolenoy River, and Lower South Saluda River. The Saluda River Basin is a priority watershed identified in the NPS Management Plan.
	7. Solicit and award 319 grants for implementation of watershed-based plans in new priority watersheds	a) Annually award projects in at least 1 newly identified priority watershed	In 2019, 2 projects were awarded to implement watershed-based plans in priority watersheds identified in the NPS Management Plan, including the Saluda River and May River.
4. DEVELOP CORRECTIVE ACTION STRATEGIES FOR WATERBODIES IMPACTED BY NPS POLLUTION	13. Aid stakeholders in the development of watershed-based plans and/or other improvement strategies and BMP selection	c) Serve as facilitator for watershed-based plan development, as needed	NPS staff work closely with stakeholders and assist with watershed-based plan development as needed. In 2019, 3 watershed-based plan development projects were selected for funding. NPS staff remain closely involved in the watershed-based plan development process.
		d) Provide GIS support for plan development by creating maps and maintaining applicable shape files	GIS support was provided to stakeholders for plan development by map creation and the maintenance of applicable shape files. GIS support, in conjunction with the Watershed program, also developed the Watershed Atlas, a user-friendly GIS-based searchable South Carolina watershed web application showing watershed descriptions, NPS projects, base maps, water quality

4b²<http://www.scdhec.gov/FoodSafety/ShellfishMonitoring/MonitoringStationReports/>

			assessments and trends, use support, monitoring sites, TMDLs, and more. It was made public in January 2016 and has been updated at least annually since.
5. ALLOCATE RESOURCES TO REDUCE NPS IMPACTS THROUGH WATERSHED IMPLEMENTATION PROJECTS	14. Issue a statewide solicitation for watershed-based plan implementation proposals, including coastal areas	a) Prepare and release at least one request for proposals each year to solicit watershed-based plan implementation projects. *By years 4 and 5, this solicitation should be directed to projects in priority areas	A request for proposals was released in February 2019 to solicit watershed implementation projects, specifically directed to projects in priority areas. Four implementation proposals were received, of which all 4 were selected for 319 funding.
	15. Convene an intra-agency review committee to select projects based on NPS Program priorities	a) Convene committee after each grant solicitation period (at least once annually)	The grant committee was convened in June 2019 after the February 2019 grant solicitation period.
	16. Award funding to committee-selected projects	a) Annually award at least 3 projects covering 6 or more watersheds. *By years 4 and 5, award projects in priority areas	In June 2019, the committee selected four new projects for funding covering 11 HUC12 watersheds. These projects were: Kingston Lake in Horry County, Congaree Creek Phase II in Lexington County, Saluda River in Greenville and Pickens Counties, and May River Phase IV in Beaufort County. The Saluda River project is in the priority area of the Saluda watershed and the May River Phase IV project is in the priority area of the May River watershed.
6. EVALUATE THE EFFECTIVENESS OF 319 IMPLEMENTATION PROJECTS	17. Develop and implement monitoring studies in watersheds where 319 projects have been or will be implemented	a) Update NPS monitoring QAPP to include new projects and other revisions and deliver plan to Department Quality Assurance Project Officer for final approval	The NPS monitoring QAPP was updated in 2019 to include new projects and revisions, and it was then delivered to the Department Quality Assurance Project Officer.
		b) Conduct monthly sampling at all 319 projects including all impaired locations within the project watershed commencing with award and continuing 1-2 years after project is completed	Monthly sampling was conducted for all 319 projects including all impaired locations within the watershed. Monitoring commences with award and continues 2 years after project completion.

	18. Analyze samples collected by monitoring staff at 319 implementation sites	a) Analyze all samples according to appropriate analytical protocol	All collected samples were analyzed according to analytical protocol.
	19. Assess projects and document any water quality improvements	a) Assess all 319 project sites within 1 year after completion of post-project monitoring and document any water quality improvements for inclusion in Annual Report and success stories	All 319 project sites were assessed within 1 year of post-project monitoring and water quality improvements were documented.
7. PROVIDE COMPLIANCE ASSISTANCE, TRACK AND ENFORCE PERMITS	23. Permit, inspect, and provide technical assistance for agricultural facilities.	a) Prepare or review agricultural waste permits statewide (typically 50-100 permits per year)	45 agricultural waste permits were prepared or reviewed statewide in FY 2019.
		b) Perform 150 inspections including follow-up, complaints, site assessment, etc. Highest priority will be given to sites in proximity to watershed-based plan implementation projects	During FY 2019, 389 routine inspections, follow-up visits, and complaint inspections were completed statewide.
	24. Follow up on referrals for non-compliance with agricultural, land application permits, MS4s, stormwater permits, onsite wastewater, and violations of the SC Pollution Control act related to nonpoint source activities	a) Follow enforcement procedures as needed for all violations. Follow-up on NPS, stormwater, and onsite wastewater referrals statewide	Enforcement procedures for NPS stormwater and onsite wastewater referrals were assigned to and followed up by SCDHEC's Water Pollution Control Division.
	25. Ensure proper installation of onsite wastewater systems and provide technical assistance as needed	a) Issue 6000 permits for new septic systems; issues licenses for septic installers and servicers.	There were 11,286 permits issued for new septic systems and 1,307 licenses issued in relation to septic contractors (i.e. installers, pumper/haulers, and master contractors).
		b) Provide compliance assistance by investigating referrals and failing systems (including in 319 implementation watersheds). Staff may also provide workshops or other training	1,188 complaints/investigations for referrals and failing onsite wastewater systems were completed in FY 2019.

	26. Through 401 water quality certifications, evaluate appropriate BMPs for wetland and water quality protection	a) Issue water quality certifications with requirements for BMPs	All water quality certifications that were issued have requirements for BMPs.
	27. Renew Forestry Commission contract to implement a Statewide Forestry BMP Compliance Program. Follow-up on any referrals for water quality impacts	a) Request annual workplan, obtain EPA approval then issue or amend enabling legislation grant agreement with SC Forestry Commission	The annual workplan for SC Forestry Commission was submitted, approved by EPA, and a new amendment extending the project for one year was issued in August 2019.
	28. Maintain a database to track permits, inspections, and compliance and enforcement actions	a) Enter all facility and permit related information into the Environmental Facility Information System (EFIS) or its replacement	All facility- and permit-related information was entered into the Environmental Facility Information System (EFIS) for FY 2019. SCDHEC is in the process of shifting to a new database.
8. ADDRESS AND TRACK RESPONSES TO NPS INCIDENTS AND COMPLAINTS	29. Address nonpoint source related complaints reported by the general public, MS4s, and other entities (different from Management Plan)	a) Investigate acute nonpoint source complaints from the public and MS4s. Initiate investigations, including site assessment, letter/report writing, and follow-up	SCDHEC investigated acute nonpoint source complaints from the public and MS4s statewide in FY 2019. Initiating investigations includes site assessment, letter/report writing, and follow-up.
	30. Coordinate compliance and enforcement action when voluntary remediation to remediate NPS incidents is unsuccessful	a) Refer incidents to enforcement staff for follow-up	Onsite wastewater incidents that required further action were referred to enforcement staff for follow-up.
	31. Track NPS investigations using established electronic systems	a) Enter all information into the Environmental Facility Information System (EFIS) or its replacement	All facility- and permit-related information was entered into the Environmental Facility Information System (EFIS) for FY 2019. SCDHEC is in the process of shifting to a new database.
9. PROMOTE AWARENESS OF NPS PROBLEMS AND BUILD CAPACITY FOR EFFECTIVE NPS OUTREACH IMPLEMENTATION	32. Increase awareness of health risks associated from swimming in impaired waters and educate citizens about how to reduce	a) Annually review and provide NPS educational information as needed on Agency swimming advisory website	The Swimming Advisory website was reviewed, and adjustments were made as needed. The Swimming Advisory information line was monitored daily throughout the warm weather months. In the summer of 2019,

IN SOUTH CAROLINA COMMUNITIES	those risks and their NPS contributions to local waters		9 swimming advisory inquiry calls were received and managed.
	33. Increase awareness of atmospheric deposition of mercury and the associated health risks through annual Fish Consumption Advisory information	a) Collect fish tissue samples statewide and obtain other samples through partnering agencies and events. Analyze tissue samples for mercury, PCBs and other metals, as needed	869 fish tissue samples were collected statewide from the Department and partnering agencies and analyzed for mercury, PCBs, and other metals as needed.
		b) Annually produce and distribute the SC Fish Consumption Advisory booklet (30,000 copies) and revise website	The SC Fish Consumption Advisory booklet was revised and is available on the SCDHEC website. ³
	34. Promote NPS awareness through the Champions of the Environment grant awards program	a) Award 8 grants to environmental education projects. Develop and air TV commercials broadcasting each project	8 grants of \$2,000 each were awarded. 1 merit award of \$750 and 2 seedling awards of \$550 each were awarded. 240 TV commercial spots were aired in 2018 (2019 TV commercials won't air until April 2019).
	36. Provide technical assistance and water quality information to stakeholders to support the effective management of NPS pollution	a) Participate in stakeholder meetings and respond to requests for information including assistance with obtaining and analyzing water quality data	Staff attended and/or presented at multiple stakeholder meetings statewide. Staff also aided in obtaining and analyzing water quality data.
		b) Update the water quality assessments on the SC Watershed Atlas online web application, which replaces the Watershed Water Quality Assessments (WWQA) for all of SC's eight major watersheds every two years in conjunction with the Integrated Report. Water quality information will be updated on a regular basis as it becomes available through other programs. Post updated information and maps online	Watershed Water Quality Assessments for SC's eight major basins have been replaced by the Watershed Atlas online. This interactive, GIS-based web application ⁴ includes the most recent watershed data previously found in the WWQAs and is updated at least once a year.

33b³<https://www.scdhec.gov/food-safety/food-monitoring-advisories/fish-consumption-advisories>

36b⁴<https://gis.dhec.sc.gov/watersheds/>

<p>10. COORDINATE NPS REDUCTION EFFORTS WITH USDA AGENCIES</p>	<p>38. Assess water quality impacts of agricultural conservation practices on pollutant loading in NWQI watersheds</p>	<p>a) Collect and analyze monthly water quality samples at established DHEC monitoring sites in all current NWQI watersheds</p>	<p>SCDHEC water quality monitoring stations in current NWQI watersheds were monitored monthly.</p>
	<p>39. Participate in the NRCS State Technical Committee</p>	<p>a) Attend committee meetings as they are called, typically 1-2 times per year. Additional staff such as agricultural permitting and watershed managers may attend, as needed</p>	<p>NRCS State Technical Committee meeting was attended in FY 2019.</p>
	<p>40. Leverage USDA resources to complement existing 319 efforts</p>	<p>a) Encourage grantees to utilize EQIP and other USDA funding options in watersheds with ongoing implementation projects. Coordinate with State NRCS staff as needed</p>	<p>Project managers for several ongoing implementation projects were assisted and encouraged to obtain EQIP funding. Several projects utilized EQIP funding alongside 319 funding.</p>
		<p>b) Select NWQI watersheds with State NRCS staff, striving to choose watersheds which are current or recently closed 319 implementation areas or where watershed-based plans exist</p>	<p>There are four current NWQI watersheds: Upper Little Saluda River, Big Creek – Little Saluda River, Smith Swamp, and Upper Caw Caw. A joint meeting with state NRCS staff was conducted in 2019 to discuss current NWQI watersheds.</p>
		<p>c) Review EQIP ranking criteria through the State Technical Committee to ensure that points are awarded for impairments and proximity to 319 projects. Provide GIS layers, etc. as needed</p>	<p>EQIP ranking criteria were reviewed through the State Technical Committee to ensure points are awarded for impairments and proximity to 319 projects.</p>
<p>11. INCREASE COLLABORATION WITH OTHER STATE, FEDERAL AND UNIVERSITY PARTNERS TO IMPROVE COASTAL MANAGEMENT OF</p>	<p>41. Collaborate with other state, federal, and university partners to develop recommendations on knowledge transfer and BMP implementation</p>	<p>b) 319 staff will meet as needed or at least annually with other state, federal, and/or university partners to ensure coordinated engagement on knowledge transfer and BMP initiatives, and awareness of relevant coastal management trends and developments</p>	<p>NPS staff collaborated as needed with state, federal, and university partners.</p>

NONPOINT SOURCE POLLUTION		c) Collaborate on preparation and distribution of communications materials that build awareness of BMPs among coastal stakeholders	NPS staff communicate with stakeholders across the state, including coastal areas. In addition, NPS staff support 319 projects and watershed planning efforts in coastal areas.
	43. Coordinate management activities between the CZARA and NPS programs	a) Coastal NPS and 319 staff will meet at least annually to coordinate efforts	Communication throughout the year assisted in coordinating management efforts between the Coastal NPS and 319 Programs.
		b) Coastal NPS staff will serve on the 319 Review Committee for each funding round	Coastal NPS staff served on the 319 Review Committee for the FY 2019 funding round.
12. ESTABLISH AND STRENGTHEN PARTNERSHIPS TO ADDRESS NPS POLLUTION	45. Increase participation by programmatic partners in the NPS Program	b) Enter into a formal partnership via letter of intent, memorandum of understanding, or contract with 1 additional programmatic partner	The NPS Program has a new grant agreement with Charleston Water System—a new programmatic partner—for a watershed-based plan development project.
	47. Encourage new entities to become involved in NPS projects	b) Solicit 5 leadership groups of interested organizations to partner on a project or apply for funding as the lead entity in watershed-based plan implementation	Stakeholder organizations were informed about the specifics of the Program and grant opportunities.
13. LEVERAGE STATE REVOLVING FUND MONEY TO ADDRESS WATERBODIES AFFECTED BY NPS POLLUTION	48. Coordinate with SRF staff to encourage implementation of NPS Plan goals	a) Assist SRF staff with goal setting in the CWSRF Intended Use Plan	NPS staff assisted SRF staff with goal setting in the CWSRF Intended Use Plan as needed.
	49. Prioritize SRF projects according to their potential to improve water quality and complement existing NPS reduction efforts	a) Using the SRF Priority Ranking System, review and score each project requesting SRF funding. Review includes assessment of priority watersheds, impairments, TMDLs, and 319 projects in the project area	Project Questionnaires were reviewed and scored using the SRF Priority Ranking System in FY 2019.
	50. Use SRF funds to implement NPS reduction projects	b) Fund at least one NPS project per year with SRF	
c) Seek to fund one project which complements a current or recently-funded watershed-based plan implementation project or TMDL			One project—North Saluda River—was selected for 319 funding that implements a recently completed watershed-based plan. This watershed-based plan was funded by the SRF set-aside.

<p>14. STRENGTHEN NPS PROGRAM ACCOUNTABILITY THROUGH REGULAR REPORTING ON THE STATE'S NPS ACTIVITIES AND ACCOMPLISHMENTS</p>	<p>51. Develop success stories for fully or partially restored waterbodies primarily impaired by NPS pollution</p>	<p>a) Identify and develop success stories for watersheds showing full restoration (EPA measure WQ-10) for at least two watersheds per year. Also develop stories for watersheds showing improvement</p>	<p>NPS staff reviewed the most recent 303(d) assessment. A success story for the Smith Swamp watershed's implementation project was identified and developed.</p>
	<p>52. Use the Grants Reporting and Tracking System (GRTS) to report on progress of active 319 projects</p>	<p>a) All project information will be regularly updated and comprehensively reviewed to ensure completeness by EPA's February 15 annual deadline in accordance with FY2014 revisions and mandated data elements</p>	<p>Project information was regularly updated and reviewed for completeness in the Grants Reporting and Tracking System (GRTS).</p>
	<p>53. Estimate load reductions for active and recently completed 319 projects</p>	<p>a) Increase cumulative annual load reductions resulting from 319-funded BMPs by the following:</p> <ul style="list-style-type: none"> • 7500 pounds of nitrogen (WQ-9a) • 2000 pounds of phosphorus (WQ-9b) • 1000 tons of sediment (WQ-9c) • 5E+13 CFU of fecal coliform bacteria and/or equivalent <i>E. coli</i> reduction 	<p>Annual load reductions resulting from active and recently completed 319-funded projects in FY19 were as follows:</p> <ul style="list-style-type: none"> • 32,011.88 pounds of nitrogen (WQ-9a) • 9,195.66 pounds of phosphorus (WQ-9b) • 3,020.00 tons of sediment (WQ-9c) • 7.25E+14 CFU of fecal coliform bacteria and/or equivalent <i>E. coli</i> reduction
		<p>b) Upload BMP and load reduction information for all applicable projects to GRTS by February 15 in accordance with FY2014 revisions and mandated data elements</p>	<p>BMP load reduction information for applicable projects was uploaded to GRTS by the February 15 deadline.</p>
	<p>54. Document 319 implementation practices using GIS</p>	<p>b) Update map as BMPs are installed</p>	<p>The Watershed Atlas has a HUC-based layer to show locations of 319 implementation projects and watershed-based plan areas. NPS staff updated this layer to reflect new projects or changes to existing projects.</p>
	<p>55. Prepare Annual Report to Congress on progress in meeting NPS Program goals</p>	<p>a) Submit Annual Report to EPA by December 1st each year. Include information on all open watershed-based plan implementation projects as well as report on annual plan milestones</p>	<p>The Annual Report was submitted to EPA in December 2018 with information on the implementation projects as well as reporting on annual plan milestones.</p>

15. PROVIDE EFFICIENT PROGRAM MANAGEMENT	56. Submit annual 319 grant application	a) Prepare annual workplan, budget, and grant application and submit to EPA by September 30 th each year	The annual workplan, budget, and grant application were prepared and submitted to EPA in September 2019 for FY 2020.
	57. Complete grant close-out packages	a) Assemble and submit grant closeout packages within 90 days of a grant close. Grants from fiscal years 2008 through 2014 will be closed out in this planning period	The closeout package for FY14 was assembled and submitted in December 2018.
	58. Ensure consistency with national and regional goals and requirements through participation in trainings, conferences and meetings	a) Participate in at least 1 national or regional conference and 1 national or regional training such as National NPS Conference, GRTS Training, or Region IV NPS Coordinators meeting	When conferences and training opportunities were available, NPS staff attended events such as the National NPS Conference, the SC Water Resources Conference, GRTS Training, and Region IV NPS Coordinators meeting.
	59. Administer 319 grants including issuing and ensuring compliance with grant agreements, processing payments, and monitoring non-federal match	a) Award grant agreements following annual project selection	Grant agreements were awarded in early Fall 2019 following the annual project selection.
		b) Review quarterly requests for reimbursement and progress reports from grantees to ensure compliance and track expenditures	Monthly and quarterly requests for reimbursement and progress reports from grantees were reviewed as they were received to ensure compliance and to track expenditures.
		c) Conduct a site visit with each active project at least once annually to ensure adherence to project goals and timeline	Site visits are conducted annually, and projects are checked up on monthly.
	60. Regularly review NPS Management Plan for effectiveness and applicability to programmatic needs	a) Perform cursory plan review and update objectives and milestones as needed as part of annual application process and Annual Report preparation	The NPS Management Plan was reviewed in full and a new 5-Year Management Plan for 2020-2024 was developed in August 2019, updating the objectives and milestones as part of annual application process and Annual Report preparation.
		b) Perform full plan review and update plan as needed	The NPS Management Plan was reviewed in full and a new 5-Year Management Plan for 2020-2024 was developed in August 2019.

VIII. RELATING PROGRESS TO EPA’S STRATEGIC PLAN

EPA’s Strategic Plan includes results-based performance goals to protect the environment. South Carolina has incorporated applicable goals and objectives into the state’s NPS Management Program. One of the goals has several objectives related to NPS. In that regard, EPA has asked states to report on four of these NPS objectives:

1. *The number of watershed-based plans (and acres covered) supported under state nonpoint program grants developed since 2002: 64 watershed-based plans have been supported under South Carolina nonpoint program grants since 2002, covering 4,180,574 acres within the state.*

2. *The number of watershed-based plans (and acres covered) supported under state nonpoint program grants developed since 2002 that are being substantially implemented: 58 NPS implementation projects have been substantially implemented under South Carolina nonpoint program grants since 2002, covering 4,480,698 acres within the state.*

Table 1: Waterbodies Removed from SC's 303(d) List of Impaired Waters	
303(d) Impaired Waters List Year	Number of Restored Waterbodies
2002	126
2004	88
2006	87
2008	170
2010	235
2012	140
2014	81
2016	52
2018	49
Total:	1,028

3. *The number of waterbodies identified in the year 2000 as impaired by nonpoint sources that are fully restored:*

Every two years, SCDHEC reviews water quality data and determines if waterbodies should be included on the SC 303(d) list as impaired. During this assessment, SCDHEC also identifies waterbodies that were previously included on the impaired waters list that can be delisted due to attainment of standards. Table 1 shows each 303(d)-assessment year with the number of water bodies that were removed since the previous year’s assessment was completed. **Since 2000, a total of 1,028 impaired waterbodies were removed from the 303(d) list because water quality standards were attained.**

4. *The annual reduction in pounds/tons of nitrogen, phosphorus, and sediment from nonpoint sources to waterbodies:*

In cooperation with its 319 partners, SCDHEC has developed methodologies for estimating pollutant load reductions from past and ongoing projects. In accordance with EPA instructions, these initial estimations have focused on sediment and nutrient pollution. The projects with current annual load reduction estimates are found in the chart on the following pages, including both closed and ongoing projects (GRTS as of November 26, 2019).

The bottom line for effectiveness, particularly in 319-funded projects, is measurable improvement in water quality. **When totaled, these figures translate to an annual reduction of 87,496.49 tons of sediment, 622,141.47 pounds of nitrogen, 142,706.02 pounds of phosphorus, and 5.21E+15 CFU of bacterial pathogens.**

This represents estimates from 54 projects with installed BMPs across SC. All grantees are required to supply detailed information in their quarterly and final reports, so the variables required to make these estimations are more accurate and readily available. Load reduction information is reported to EPA using the Grants Reporting System (GRTS). SCDHEC will continue to assess water quality through its extensive ambient water quality monitoring strategy.

Annual Load Reductions Estimates for all 319 Implementation Projects

Data taken from EPA Grants Reporting and Tracking System (GRTS) 11/26/2019

IMPLEMENTATION PROJECTS		Nitrogen (Pounds)	Phosphorus (Pounds)	Sediment (Tons)	Fecal Coliform (CFU)
COMPLETED PROJECTS	Boggy Creek - Enoree River Bacteria Reduction	1550.00	1664.00	919.00	8.6748E+13
	Burton Hill M2 Regional Water Quality Retrofit	1837.00	284.00	63.00	8.7000E+09
	Bush River TMDL Implementation	24202.06	4742.86	6213.40	9.2000E+13
	Coneross Creek and Beaverdam Creek TMDL Implementation	28622.00	5620.00	15638.00	8.6002E+11
	Congaree Creek Watershed Water Quality Improvement Project - Phase I	1742.00	683.00	0.00	1.3500E+12
	Crabtree Water Quality Improvement Project	2954.00	1159.00	0.00	2.2960E+12
	Crane Creek Watershed Improvements	14.90	1.00	0.40	4.9000E+09
	Enoree River Total Maximum Daily Load Implementation Project	13088.69	2490.72	1485.20	3.8400E+11
	FC Bacteria TMDL Development and Implementation for Big Swamp and Dissolved Oxygen Characterization for Big Swamp and Singleton Swamp Watersheds	2786.20	1037.00	161.20	1.8850E+12
	FC Bacteria TMDL Development and Implementation for the Scape Ore Swamp Watershed	249691.80	44412.01	65.10	1.1700E+14
	FC Bacteria TMDL Implementation for Cane Creek and Little Cane Creek	617.63	224.93	11.46	6.2155E+11
	FC Bacteria TMDL Implementation for the Litchfield-Pawley's Island Estuary	2031.69	3691.94	7.60	7.0615E+14
	Fecal Coliform Bacteria TMDL Implementation for Spears and Kelly Creeks	15358.99	1718.39	568.60	9.2100E+12
	Fecal Coliform Bacteria TMDL Implementation for the Thompson Creek Watershed Located in Chesterfield County	10919.70	2883.30	778.50	2.3640E+12
	Fecal Coliform Bacteria TMDL Study and Implementation for the Fork Creek Watershed in Chesterfield County	4910.32	1114.36	659.20	5.1800E+12
	Fecal Load Reduction BMPs in Support of the May River Watershed Action Plan Phase 2	698.00	127.00	16.00	6.1000E+09
	Fecal Load Reduction BMPs in Support of the May River Watershed Action Plan Phase 3	5.48	0.86	0.00	3.7000E+10
	Fecal Load Reduction in the May River Watershed Phase 1	731.00	286.00	1.00	1.8740E+12
	Hard Labor Creek Watershed Water Quality Improvement Project	2977.70	1152.40	251.00	5.0706E+13
	Hills Creek WS WQ Improvement Project	3285.56	438.08	113.31	3.4130E+11
	Hollow Creek Watershed Water Quality Improvement Project	4508.00	1232.00	1368.00	6.2540E+13
	Horry Aynor and Dogbluff (HAD) Water Quality Project	8704.00	2170.00	114.00	6.9835E+13
	Huff Creek Pollution Reduction for <i>E. coli</i>	155.00	61.00	0.00	1.2090E+11
	Implementation of a Sewee to Santee Watershed Based Plan	2253.00	829.00	0.00	1.6400E+12

IMPLEMENTATION PROJECTS CONTINUED	Nitrogen (Pounds)	Phosphorus (Pounds)	Sediment (Tons)	Fecal Coliform (CFU)
Implementation of a Toogoodoo Creek Watershed-Based Plan to Address Fecal Coliform Bacteria Through Targeted Nonpoint Source Management	1462.20	573.40	0.00	1.1370E+12
Implementation of an Okatie River Watershed Plan	2363.00	654.00	19.00	7.1497E+14
Interstate Fecal Coliform Bacteria TMDL Development and Implementation for the Upper Little Pee Dee River	24525.70	11682.10	12655.70	3.5000E+12
Little Eastatoe Creek Restoration	103.00	43.00	33.00	5.7800E+12
Little Pee Dee River Watershed Water Quality Improvement Project	24285.00	6443.00	2978.00	1.4972E+14
Little Saluda and Clouds Creek TMDL Implementation Project	7326.00	1417.00	441.00	1.3062E+12
Long Cane Creek Total Maximum Daily Load (TMDL) Implementation Project	12967.60	2593.80	2101.50	2.8662E+12
Lucas and Timrod Parks Restoration Project	151.40	66.00	14.40	1.7943E+15
Middle Saluda Fecal Coliform Pollution Reduction	310.00	121.00	0.00	2.4190E+11
Middle Savannah Watershed Total Maximum Daily Load (TMDL) Implementation Project	2204.50	805.20	0.00	1.9850E+12
Murrells Inlet Watershed Plan BMP Demonstration Projects	209.00	76.00	3.00	1.5000E+11
Okatie West Water Quality Retrofit	480.00	71.00	19.00	7.7800E+13
Owens Field Park BMP Construction and Education	117.00	4473.00	1.00	6.4047E+12
Pacolet River Fecal Coliform Reduction Pollution	31837.00	5516.00	2483.00	2.0882E+14
Rabon Creek Total Maximum Daily Load (TMDL) Implementation Project	4611.00	1343.00	645.00	3.8700E+13
Reducing Bacteria Levels in the Saluda River	211.00	90.00	12.00	3.7467E+12
Richland Creek Water Quality Master Plan - Phase 1	36.00	14.00	26.00	0.0000E+00
TMDL Implementation for FC Bacteria and Turbidity in the Big Wateree Creek Watershed	21455.03	3443.24	1705.00	5.3583E+12
TMDL Implementation for FC Bacteria in Turkey Creek and Bullock Creek Watersheds	10004.52	2943.33	3256.80	4.6930E+13
TMDL Implementation for FC in Allison Creek, Calabash Branch, Beaverdam Creek, and Brown Creek	9329.90	1779.00	3805.82	7.9730E+12
TMDL Implementation for FC in the Fishing Creek Watershed	30394.90	5467.90	5884.60	1.0403E+13
Twelve Mile Creek Watershed Fecal Coliform TMDL Reductions	7387.10	1953.40	12367.70	1.3380E+14
Twelve Mile Creek Watershed Water Quality Improvement Project	686.00	195.00	30.00	1.5724E+13
Twenty-Five Mile Creek Watershed Water Quality Improvement Project—Richland County	2930.50	805.00	535.00	1.2100E+11
Tyger River TMDL Implementation	11231.00	3009.00	6751.00	3.1400E+12
Walnut Creek Nutrient Reduction Project	1650.00	608.00	301.00	4.2569E+13
Total for Fully Completed Projects with Final Reports	591,913.07	134,208.22	84,502.49	4.4906E+15

IMPLEMENTATION PROJECTS CONTINUED		Nitrogen (Pounds)	Phosphorus (Pounds)	Sediment (Tons)	Fecal Coliform (CFU)
OPEN PROJECTS	Congaree Creek Watershed Water Quality Improvement Project – Phase II*	0.00	0.00	0.00	0.0000E+00
	Earlewood Park Stream Restoration, Buffer Replanting, and Bioretention*	0.00	0.00	0.00	0.0000E+00
	Evergreen Tract Stormwater BMP*	0.00	0.00	0.00	0.0000E+00
	Fecal Load Reduction Best Management Practices in Support of the May River Watershed Action Plan, Phase IV – Sanitary Sewer Connections*	0.00	0.00	0.00	0.0000E+00
	Gills Creek Stream and Riparian Buffer Restoration*	0.00	0.00	0.00	0.0000E+00
	Hyatt Park Revitalization*	0.00	0.00	0.00	0.0000E+00
	Hog Inlet Watershed Plan Implementation Project*	0.00	0.00	0.00	0.0000E+00
	Kingston Lake with Crabtree*	0.00	0.00	0.00	0.0000E+00
	Little Pee Dee with Chinnners Swamp	24,285.00	6,443.00	2,978.00	1.4972E+14
	Mitchell Swamp out of Loris	4,601.00	1,535.00	0.00	5.7200E+14
	North Saluda River and Saluda Lake Watershed Implementation Project for Sediment Runoff*	0.00	0.00	0.00	0.0000E+00
	Reducing Bacteria and Sediment Pollution in the South, Middle, and North Tyger River Subwatersheds	67.00	19.00	16.00	1.3000E+12
	Shaw’s Creek Watershed Land Conservation Program*	0.00	0.00	0.00	0.0000E+00
	Shaw’s Creek Watershed Water Quality Improvement Project—Agricultural Sources*	0.00	0.00	0.00	0.0000E+00
	Twenty-Five Mile Creek Watershed Water Quality Improvement Project—Kershaw County	1,275.40	500.80	0.00	9.9200E+11
	Total for Open Implementation Projects		30,228.40	8,497.80	2,994.00
Grand Total for ALL Implementation Projects		622,141.57	142,706.02	87,496.49	5.2146E+15

*Note: Projects with zero load reductions have not yet been fully implemented, or load reductions have not yet been reported or calculated.

IX. EPA NPS SUCCESS STORY



NONPOINT SOURCE SUCCESS STORY

South Carolina Watershed Project Leads to Cleaner Water in Smith Swamp

Waterbody Improved

Nonpoint source (NPS) pollution from agriculture runoff and failing septic systems has contributed to elevated bacteria levels in the Smith Swamp watershed. Specifically, Smith Swamp failed to attain its primary recreation designated use, prompting South Carolina to add this waterbody to the 1998 Clean Water Act (CWA) section 303(d) list of impaired waters for bacteria impairment. A total maximum daily load (TMDL) for fecal coliform (FC) was developed for Smith Swamp in 2005 based on exceedances of bacteria water quality standards (WQS) at a key monitoring station in this watershed. In response, stakeholders conducted outreach to the public, implemented agricultural best management practices (BMPs), and repaired failing septic tanks. Water quality in the watershed has since significantly improved, and this key monitoring station is now designated as fully supporting.

Problem

The Smith Swamp watershed covers an area of roughly 23,350 acres in Marion County (Figure 1). The watershed captured by water quality monitoring station PD-187 contains 1,645 acres and drains the southeast portion of the town of Marion. The area is mostly agricultural, but roughly 26 percent is developed. There are large numbers of cattle farms, confined hog operations, horse “hobby” farms, and crop farms that apply hog manure and poultry litter to the land. Most rural homes and businesses in the area rely on septic tanks for wastewater treatment.

State criteria for FC impairment require that no more than 10 percent of the total samples during any 30-day period exceed 400 colony-forming units (CFU) per 100 milliliters (mL). Through extensive monitoring by the South Carolina Department of Health and Environmental Control (SCDHEC) at station PD-187 in the Smith Swamp watershed (see Figure 1), recreational uses were found to be only partially supported due to the bacteria exceedances, leading SCDHEC to place PD-187 on the CWA section 303(d) list of impaired waters in 1998.

SCDHEC also developed a TMDL for FC bacteria at station PD-187 in 2005. The TMDL said it was necessary to meet a target of $9.20E+10$ CFU/day, or to have a 66 percent reduction to achieve the water quality target.

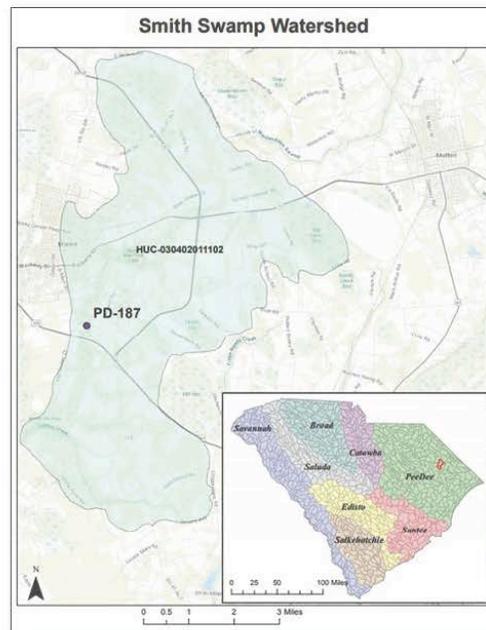


Figure 1. The Smith Swamp watershed in eastern South Carolina has shown water quality improvement at SCDHEC monitoring station PD-187.

Story Highlights

In 2008, the Pee Dee Resource Conservation & Development Council (RC&D) began an effort to repair septic tanks and implement agricultural best management practices (BMPs)—specifically targeting swine, cattle, and horse farms—as part of the Little Pee Dee River Watershed Water Quality Improvement Project covering the entire Little Pee Dee River and Catfish Creek watersheds.

Clemson University’s Confined Animal Manure Managers Program team partnered on the project, conducting two seminars during this project for 35 local swine producers. As a result, six swine farms developed conservation plans and implemented BMPs to better manage the application of wastewater on their farms. To reach cattle farmers, the project team contacted the Cattlemen’s Association and local agricultural stores and used doorknob handouts, flyers in stores, and word of mouth between neighbors. Consequently, 18 cattle farms received individualized conservation plans and, as a total, implemented the following BMPs on their properties: 484 acres of runoff management; 25 acres of critical area stabilization; and 77,265 feet of stream bank stabilization, sensitive area protection, and cross-fencing. Partners also worked with landowners to start prescribed grazing with their livestock, affecting 484 acres, and to exclude herds from waterways and provide alternative water sources. In total, landowners installed 12 wells and 39 troughs along with 36,089 square feet of heavy use areas to reduce FC runoff. Hobby farms are typically excluded from the U.S. Department of Agriculture’s (USDA’s) Environmental Quality Incentives Program cost-share availability, providing a unique opportunity for CWA section 319 funding to address NPS pollution from these farms. Thus, this project supported two workshops for hobby farmers, educating over 48 horse farmers and allowing for implementation of conservation plans to assist historically underserved horse producers in protecting their water quality.

A local community leader was hired to lead septic tank outreach and implementation, as past experience showed that a well-known community member would build trust more quickly. As a mark of success, the project team located and repaired or replaced 108 failing septic tanks compared to the estimated 60 that were thought to have issues upstream of the drinking water intake. Horry Soil and Water Conservation

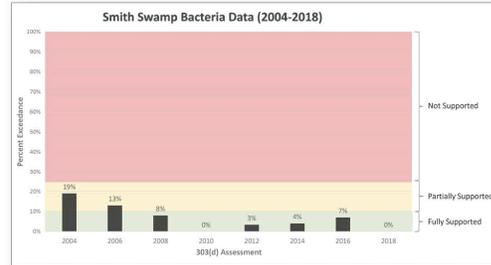


Figure 2. Percent exceedance of the bacteria single sample maximum standard at Station PD-187.

District (SWCD) continues to address water quality issues in the Pee Dee through outreach and education, agricultural BMPs, and septic repair and replacement.

Results

A comparison of data collected at station PD-187 before the project began in 2008 and after its completion in 2011 indicates that the site improved from not supporting, to partially supporting, and finally to fully supporting recreational use at this monitoring site (Figure 2). Bacteria levels have consistently met WQS at station PD-187 since 2008. As a result, Smith Swamp was removed from the list of impaired waters for FC in 2014. In total, implementation efforts reduced pollutant loadings of nitrogen by 24,285 pounds/year, phosphorus by 6,443 pounds/year, and FC bacteria by 1.497E+14 CFU.

Partners and Funding

Pee Dee RC&D encouraged project participation using partnerships with Santee-Wateree RC&D; the Marion County and Dillon County SWCDs; the USDA Natural Resources Conservation Service in Marion, Dillon, and Horry counties; South Carolina Department of Natural Resources; Clemson University Cooperative Extension Service; and local landowners. These partners provided \$511,376 in cash and in-kind services. CWA section 319 funding from SCDHEC also provided \$693,490. Overall, with the assistance of partners and landowners, this project contributed \$696,490 directly in cost-share funds to 843 people and provided information on BMPs to over 2,000 people to help reduce NPS pollution.



U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-19-001HH
November 2019

For additional information contact:

Carmony A Corley
South Carolina Department of Health and
Environmental Control, Bureau of Water
803-898-4401 • corleyc1@dhec.sc.gov

X. WBP IMPLEMENTATION – PROJECTS COMPLETED IN FY19

Richland Creek

Richland Creek is a tributary of the Reedy River with approximately 8.6 square miles of watershed. The majority of the watershed is developed, with most of the development taking place before stormwater control measures for water quantity and/or quality were required. The objective of this grant was to implement BMP construction projects that would provide the overall desired environmental outcome of reducing TSS loading in Richland Creek.



Pre-construction McPherson Park upstream with massive amounts of debris blocking stream



Post-construction McPherson Park upstream reach showing debris removal, stabilized stream channel, and geolift installation

Geolifts

This grant, led by the City of Greenville, included three projects from the City's Master Plan: McPherson Park – streambank restoration, bioretention basins, and urban porous pavement; TD Convention Center – streambank restoration and regenerative stormwater conveyance; and Richland Creek Mainstem – streambank restoration and in-stream structures. Qualitatively, site inspections have shown that the base flow within the streams has been improved during the post-construction period of all three sites.

Inspections of the stream channel show improved clarity and stable banks that are no longer eroding. All three sites were finished in 2019; therefore, long-term monitoring will be done

for the quantitative TSS removal for these projects. To ensure continued success, each site has a recurring maintenance schedule in conjunction with the Parks and Grounds staff within the City of Greenville.

Congaree Creek – Phase I

The Congaree Creek watershed consists primarily of Congaree Creek and its tributaries with a drainage area of 143 square miles (91,399 acres) located in Lexington County, South Carolina. Congaree Creek is a significant tributary to the Congaree River. Through this 319 Project, Lexington County sought to reduce bacterial loads in the Congaree Creek Watershed by providing cost-share assistance to homeowners and businesses in the Congaree Creek Watershed. These activities were expected to help restore designated uses in the watershed, protect the stream for the long term, and involve watershed stakeholders.

Lexington County recruited homeowners through various methods including: post cards mailed to 5,000 homes/businesses on septic systems in the watershed; The Lexington Ledger & Lexington Life magazine; brochures at Feed & Seed and at municipal offices; the County's, Towns', and Cities' Facebook pages, and the County's, Towns', and Cities' websites.

As a result, 56 failing septic tanks in the watershed were repaired or replaced during the grant period. The owners of the failing septic tanks were also educated on proper maintenance of a septic system and

best practices in order to prevent future issues from occurring. It is estimated that the 56 septic repairs completed through this project will prevent 1.35E+12 colony forming units (CFU) per year from entering Congaree Creek each year.



Residential septic repairs in Congaree Creek Watershed – before, during, and after construction



May River – Phase III

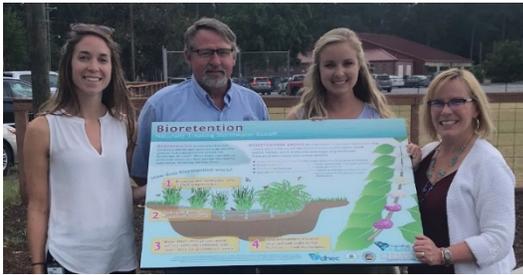
In response to rising fecal coliform concentrations, the May River was designated a priority and threatened watershed in 2008 by EPA and SCDHEC. The Town and its partners were awarded an EPA 319 grant by SCDHEC in 2009 (Phase 1), 2012 (Phase 2), and again in 2016 (Phase 3) to implement the May River Watershed Action Plan to restore water quality throughout the May River. The Phase 3, 319 grant supported a Town Hall campus retrofit project that installed pervious pavement systems to replace four existing asphalt, gravel, and dirt parking lots; installed a bio-retention best management practice (BMP) to



BLUFFTON TOWN HALL
BLUFFTON, SC
29910



Conceptual design of Town Hall renovation and campus retrofit of four parking areas, installation of a stormwater bio-infiltration cell, and interpretive signage.



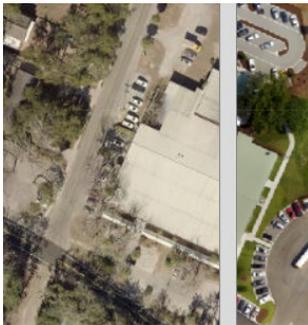
(L-R) Carmony Corley (SCDHEC), Bill Baugher (Town of Bluffton), Eliza Nixon (SCDHEC), and Kim Jones (Town of Bluffton) at Bio-infiltration Interpretive Sign

infiltrate runoff generated from the rear parking lot; installed 200 sf of pavers to infiltrate building runoff; and installed five interpretive signs. The project is expected to reduce fecal coliform loading by reducing the volume of runoff discharging from the site, which pre-dates any stormwater treatment requirements, and ultimately affects the May River. The 25,745 sf of pervious parking areas, about 116 sy bioretention cell, and 200 sf of pavers will reduce fecal coliform loading by holding runoff from small, frequent storms within their respective storage layer where it will be infiltrated over a 48-72-hour period.

The Town Hall campus is an ideal location for this project not only due to site conditions which allow for the successful use of infiltration-based stormwater BMPs, but also for its high levels of public visibility and the educational opportunities that provides. Five interpretive signs were installed—one at each parking lot and at the bio-infiltration cell. More than 100 people participated in the ribbon cutting



The Public, Town Council, Town Manager, and Staff prepare for the ribbon cutting to unveil the newly renovated Theodore D. Washington Municipal Building (Bluffton Town Hall) and Campus on 5/29/19.



grand opening held in the newly renovated Town Hall building on 5/29/19.

Not only can the public learn about the project on site, but also online by visiting the Town’s 3D story map at: <http://townofbluffton.maps.arcgis.com/apps/Cascade/index.html?appid=e29ba26b7ff64785bbfec319f28867b0>, or viewing the before and after construction views on the “Town Hall Renovation Swipe” at: <https://townofbluffton.maps.arcgis.com/apps/StorytellingSwipe/index.html?appid=dbc5206b7afc40d5a96489048f03a498>.

XI. WBP IMPLEMENTATION – PROJECTS ONGOING IN FY19

Gills Creek

Gills Creek Watershed Association (GCWA) was awarded a 319 grant in October 2017 to support restoration efforts along Gills Creek in downtown Columbia, South Carolina. This project will help address and improve water quality conditions in the Watershed through a stream restoration project that incorporates a riparian buffer enhancement and stormwater green infrastructure retrofits. The targeted area of 840 feet along Crowson Road between Ft. Jackson Blvd. and Devine St. were targeted highest priority for stream restoration and BMP implementation. The stream banks in this area will be recontoured to reduce the slope so they can better support trees and other vegetation. In-channel structures will also be added to promote stream sinuosity and diverse aquatic habitat. Toe boulders and

root wads will be used to help stabilize the recontoured banks and provide a solid foundation for new riparian plants. Additionally, a floodplain bench will be installed to help alleviate downstream flooding and provide a flatter surface for plants. This area is listed as a “priority location” for BMP retrofits in the Gills Creek Watershed Management Plan. High levels of dense development and concentrated impervious surface in this area establish its status as a critical area and priority for BMP retrofits.

Original design of the creek restoration project along Crowson Road in Columbia, SC

This project area is immediately flanked by a paved parking lot on one side and a paved road and other small parking lots on the other side. This project will help reduce nonpoint source pollution entering Gills Creek by intercepting stormwater runoff coming from these impervious surfaces. Linear bioswales and rain gardens can be used in this project to help infiltrate stormwater, removing pollutants as it does so. In areas where runoff cannot be addressed with biofiltration, pavement will be replaced with pervious materials such as pavers or pervious concrete. Where stormwater is not captured by these stormwater BMP retrofits, the newly established riparian buffer will help filter the remaining sheet flow.



To date, GCWA has collaborated with Wildland Engineering, Inc. to complete the design process for this project. Currently, the project has reached the 90% design phase and GCWA is in the process of securing temporary construction easements from the property owner. GCWA has approached engineers from the City of Columbia and agreed that the City will be in charge of the procurement of a construction firm for the construction process of the completed plan. Construction is set to begin in the early summer of 2020 and should take approximately three months to complete. The site along Crowson Road is currently under construction as a part of the City of Columbia sanitary sewage project. This project should be completed by Spring of 2020, allowing GCWA access to the property to begin work.

Shaws Creek – Agriculture

The City of Aiken was awarded a nonpoint source (NPS) grant to implement agricultural best management practices (BMPs) to address sources of nutrients, sediment, and bacteria pollution in Shaws Creek Watershed. The project targets agricultural property owners and operators of lands located adjacent to Shaws Creek with cattle, horse, poultry, orchard, and row crop production. These targeted properties receive priority for BMP installation, although the program is available to any agricultural producer in the watershed. A variety of potential agricultural BMP installations are available to participants ranging from exclusion fencing to waste management, manure composting to critical area planting. An outreach effort accompanies this project in which producers are educated on the sources and prevention of agricultural nonpoint source pollution.



Gravel road and culvert installed at farm

Two conservation plans have been completed and signed to date. The first conservation plan is under contract to install BMPs (plantings) in spring 2020. The second conservation plan, which was developed this year, has already begun stabilizing the steep access road and creek crossing. The project is continuing to recruit farmers through flyers, post cards, social media, letters to churches, and other means. The part-time conservation technician for the Shaw's Creek Ag 319 Grant has had meetings with a third and fourth farmer, but these conservation plans have not yet been finalized. The project has also provided an Estate Planning and Pasture Management Workshop to farmers within the Shaws Creek Watershed and surrounding area. Stakeholders are beginning to plan a second workshop for January 2020.



Pre-construction access road stabilization at farm



Post-construction stabilized road installed fall 2019 at farm

Twenty-Five Mile Creek (Kershaw County)

Through the development of the bacteria and macroinvertebrate watershed-based plans for Twenty-Five Mile Creek, it was concluded that nonpoint source pollution from failing septic systems should be a high priority for the watershed. Kershaw, Richland, and Fairfield Counties are working together to provide a cost share opportunity to repair or replace failing septic systems in homes and businesses within the Twenty-Five Mile Creek Watershed and provide septic maintenance education to all participants. The goal of this cost share program is to improve



Septic contractor completing septic replacement for a participating homeowner in Spring 2019

Twenty-Five Mile Creek’s water quality so that it meets State water quality standards while building community support for the protection and enhancement of the water resources of the Twenty-Five Mile Creek Watershed.

Kershaw County was awarded this 319 Project in Fall 2016 with an initial end date of Fall 2019. This past year, Kershaw County applied for and was awarded a project extension to July 2020. Since the fall of 2016

DO YOU HAVE A SEPTIC ISSUE?
FUNDS MAY BE AVAILABLE TO YOU!

TWENTY-FIVE MILE CREEK WATERSHED

IF YOU ARE HAVING ANY OF THE FOLLOWING PROBLEMS, YOUR SEPTIC SYSTEM MAY NEED TO BE REPAIRED

- ✓ YOUR TOILET IS GURGLING;
- ✓ WATER IS BACKING UP INTO YOUR DRAINS;
- ✓ YOUR SINKS AND TOILETS DRAIN SLOWLY;
- ✓ THERE ARE DAMP SPOTS IN YOUR YARD DURING DRY WEATHER;
- ✓ AREAS OF YOUR YARD HAVE LUSH GRASS; OR
- ✓ YOU SMELL SEWAGE

You may qualify for funding to assist with the cost of a septic system repair or replacement for your home or business if located within Twenty-five Mile Creek Watershed (see map above) regardless of the county (Kershaw, Richland or Fairfield). For more information and requirements, please visit:

www.kershaw.sc.gov/25milecreek
or call (803) 425-7230

This project is funded wholly or in part by the US EPA under Section 319 Grant through the SC Department of Health and Control (SC DHEC) and the United States Environmental Protection Agency (US EPA)

this project has helped fund over 40 septic repairs/ replacements within Kershaw County, 22 of the 40 repairs thus far were completed in 2019. Kershaw County has recruited homeowners and businesses owners by promoting the program through social media, flyers at local events and heavily trafficked locations within the watershed, radio broadcastings, and sending postcards to all known septic homes/businesses in the watershed. Additionally, the County has provided all participants with maintenance literature and follow-up pumping schedule reminder magnets.

Mitchell Swamp out of Loris

The Horry Soil and Water Conservation District (HSWCD) has helped many people with failing septic systems either repair their existing septic system or tie on to sewer over the past year. The 319 Grant Program originating with EPA and distributed through SCDHEC has made it possible for the HSWCD to assist people in the Loris Area with their wastewater by either repairing their existing septic system or tying on to sewer. This grant program is almost complete, well ahead of schedule.



BEFORE – Failing septic tank system



AFTER – Replacing failing septic tank system

Many areas around Loris have marginal soils for septic systems and sometimes citizens do not maintain their septic systems as they should. The end result is that many septic systems do not operate properly. In the past year through its 319 grant, the HSWCD has installed 62 septic tanks. Throughout the entire grant period, the Horry Soil and Water Conservation District has been able to assist individuals, businesses, and entities with 101 septic repairs and 15 sewer tie-ons. Almost all of the funds for this grant are obligated, but there are some funds still available at this time. Plans are on track to complete this grant before its scheduled end date.

Little Pee Dee/Chinners Swamp

The Little Pee Dee Water Quality Grant has been a great success for the Horry Soil and Water Conservation District over the past two years. The program began with a waiting list of prospective participants leftover from a prior grant in the same general area. There is also a large agricultural component to this grant. This grant is 95 percent complete, with just a few sewer tie-ons remaining to complete the project.



Swine Liquid Waste Spreader



Swine Waste Agitator

Through this grant program, the Horry Soil and Water Conservation District has been able to help 4 farmers purchase “honey” wagons or spreaders—depending on whether they raise cattle or chickens—to better manage and apply the waste generated by their animal production facilities. One producer purchased an agitator for his swine operation, another producer installed a watering system for his goats, and another producer installed fencing for his cattle through the Grant Program. During the past year, HSWCD repaired or replaced 41 tanks and switched 22 septic systems to sewer tie-ons. Overall, during the whole grant period, 185 septic systems have been repaired or replaced and 23 systems have tied on to sewer. The 319 Grant Program has enabled the Horry Soil and Water Conservation District to make positive steps to improve the water quality in the Little Pee Dee Water Quality Project Area.



BEFORE – Failing septic tank system



AFTER – Replacing failing septic tank system

Evergreen Tract

Beaufort County was awarded a three-year 319 stormwater project grant at the end of 2018. The 319 grant is to aid in funding construction for the installation of a wet detention pond to treat stormwater runoff from a previously untreated portion of Okatie Highway (HWY 170). The Okatie River Watershed has been identified as having water quality issues since the early 1990s when shellfish harvesting restrictions began. Beaufort County has made and continues to make efforts for improvement of the Okatie River Watershed’s water quality using the Okatie River Watershed Plan, with the goal to improve the waters to allow reopening of the shellfish beds for harvesting.

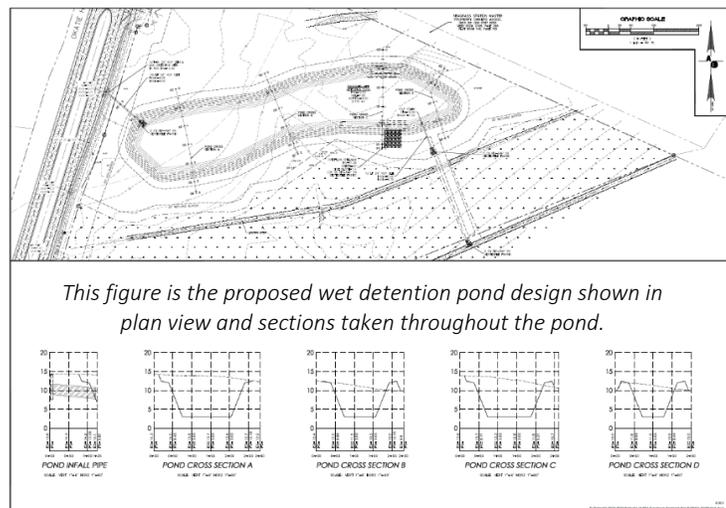


The photo to the left is the existing SCDOT stormwater curb inlet proposed to be altered and offsite drainage area looking north to be redirected to the wet retention pond for treatment prior to discharging to the Okatie River. The photo to the right is looking east at the Beaufort County-owned property on which the proposed wet retention pond is to be constructed.

The project site for the Evergreen Tract Stormwater BMP is a 20.3-acre undeveloped lot that was recently purchased by Beaufort County to facilitate completion of this project. The lot consists of 11.3 acres of planted pines and 9.0 acres of forested wetlands. The site elevations range from 15 feet to 7 feet, and waters here eventually flow into

the headwaters of the Okatie River. The proposed wet retention pond will receive approximately 13.9 acres of redirected flow from the Okatie Highway and 10.8 acres of onsite flow. The redirected flow will be accomplished by altering an existing SCDOT stormwater curb inlet by installing a weir and stormwater pipe connection located on Okatie Highway.

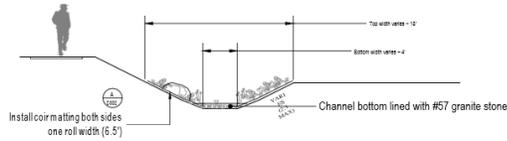
This project is currently in the design and permitting phase. The proposed stormwater BMP is an approximately 3.5-acre wet retention pond to treat stormwater runoff from a previously untreated portion of Okatie Highway by altering an existing stormwater curb inlet to redirect flows to a wet retention pond that eventually outfalls to the Okatie River. Over the past year, Beaufort County has developed final design plans and approval of permits including US Army Corps of Engineers Nationwide Permit, Town of Bluffton Development Permit, and MS4 approval. The SCDHEC/OCRM NOI Permit has been submitted and is awaiting Coastal Zone Consistency approval. Beaufort County is reviewing the construction drawings, drainage report, and cost estimate in



This figure is the proposed wet detention pond design shown in plan view and sections taken throughout the pond.

preparation of final comments and finalizing construction plans. Final construction plans, drainage report, and permits are expected to be completed February 2020.

Hyatt Park



BIO-SWALE DETAIL



IN-LINE POOL/ MARSH DETAIL

The Hyatt Park Revitalization project, which consists of four BMP components and was identified in the City of Columbia’s Smith Branch Watershed Masterplan, includes stream daylighting, stream restoration, vegetated buffers, and bioretention. These features will be the center piece of the entire park revitalization that is currently in the design process. The design team of Kenneth B. Simmons and Robinson Design Engineers were selected through an RFP competitive process to implement permitting and construction drawings of the schematic masterplan for Hyatt Park. Robinson Design Engineers submitted the Nationwide Permit #27 to the Army Corps of Engineers on November 5, 2019, and

Kenneth B. Simmons will submit the City of Columbia Land Disturbance Permit on November 26, 2019. During this permit review, design details will be completed to issue the project out to bid for construction in early 2020.

During the design process, the team realized the possibility to daylight more stream than the 500 linear feet (lf) originally planned. Currently, two unnamed tributaries of Smith Branch with adjacent wetlands are located on the project site. One tributary (1,155± lf) is contained in a stormwater culvert system that bisects the property in a north-south direction. The second tributary (340± lf) is in an open channel with a small adjacent wetland (0.080± acres) located near the upstream end of the stream channel. The plans, as currently designed, intend to daylight 970 lf of the 1,155 lf tributary contained in the existing stormwater culvert. Approximately 25± lf of the existing open channel stream will be slightly modified and naturalized to provide a stable confluence with the newly daylighted stream. With the exception of vegetated buffer plantings, the remaining section of the open tributary will not be impacted. Two concrete weirs will be constructed to provide structural controls due to site topography and water quality enhancement during storm events.



Part of the Hyatt Park project area to be daylighted

Design work will be substantially complete by the end of 2019. Construction services to include bid procurement is scheduled for 2020, and the remaining work of monitoring is scheduled for 2021.

Earlewood Park

The City of Columbia, in partnership with The Congaree Riverkeeper and Sustainable Midlands, was awarded an EPA Section 319 grant in October 2018 for nonpoint source pollution reduction projects in Earlewood Park as part of implementation of the Smith Branch Watershed Management Plan. The three grant-funded projects include stream bed and bank restoration and stabilization of a tributary located in the southern portion of the park, buffer planting of the restored stream section, and construction of a bioretention area in the northern portion of the park.



BEFORE - Severely eroded and incised tributary to Smith Branch in Earlewood Park

The stream restoration and stabilization project was constructed on a short tributary to Smith Branch that originates within the park below a pipe that drains an older established neighborhood. Storms cause intensive flows from the pipe into the high gradient upper portion of the tributary. These flows, coupled with erosion and soil compaction on steep side slopes from a popular disc golf course have created extreme bank erosion and stream incision within the tributary over many years. The stream has been a hazard to park users and the erosion has resulted in excessive sedimentation to the lower part of the tributary and eventually to Smith Branch. In April 2019, the City of Columbia received US Army

Corps of Engineers approval to use Nationwide Permit 18 to raise the bed and regrade 207 linear feet of moderately and highly eroded intermittent stream and 146 feet of moderately and highly eroded

ephemeral stream. Project construction began shortly afterwards and was completed in late August of 2019. The repaired stream channel includes gentler sloping banks that connect to a floodplain during excessive flows, and a series of rock step pools designed to prevent bed and bank erosion and allow for water infiltration in the uppermost portion of the stream and more uniform and extended flows to the channel below the project. The project was designed so that it would not impact the wetland and less impaired perennial portion of the stream below. Two walkways, each leading to a separate wooden bridge crossing, were constructed to concentrate foot traffic to planned and maintained areas in order to minimize erosion from disc golf course users and other park visitors. The stream buffer will be planted with native vegetation by Fall 2020. This



AFTER - Stream bed and bank restoration area



stream restoration project should substantially reduce sediment loading to the stream as well as nitrogen, phosphorus, and BOD loading.

The bioretention area in the northern portion of the park was also completed by August 2019. It was designed to collect and treat stormwater from an outflow pipe coming from a low-density residential neighborhood as well as stormwater sheet flow from the adjacent NOMA Dog Park.



Bioretention area - inflow pipes and exit to outflow channel flowing to Smith Branch

The pipe system just above the bioretention area is constructed to divert excessive flows to a discharge channel below the bioretention structure, which should prevent damage to the structure during intense storms. The excess flow and treated flow enter Smith Branch a short distance downstream. Bioretention is expected to treat and reduce nitrogen, phosphorus, sediment, and bacteria loading to Smith Branch.

Buffer planting of the stream restoration project area and bioretention planting with carefully selected native vegetation is scheduled to be completed by Fall 2020. This will be accomplished in coordination with Congaree Riverkeeper and Sustainable Midlands who will provide volunteer organization. All planting will include native herbs and grasses, shrubs, and large container trees. Buffer planting with native vegetation should enhance wildlife habitat in and around the bioretention area and along the restored stream corridor and is expected to reduce BOD, nitrogen, phosphorus, sediment, and bacteria loading to the tributary. Signage is also planned for each of the three project components which will provide information and education about their function and importance to water quality. Signage should be established by the end of 2020.

Tyger River Subwatersheds

In 2018, Upstate Forever was awarded a 319 grant to implement the BMP recommendations from the watershed-based plan for the South, Middle, and North Tyger River subwatersheds to reduce bacteria and sediment pollution in all three Tyger River subwatersheds. Phase 1 includes the repair and replacement of 32 septic systems, 12 agricultural improvement projects, the protection of six priority properties, and restoration of riparian buffers in an eroded area. Numerous partners have assisted Upstate Forever by providing a combination of financial and in-kind support for this work. Project partners include: Greer Commission of Public Works (Greer CPW), Startex-Jackson-



Pictures of failing septic system surfacing in backyard next to tool shed (left) and the residence after the installation of new drain field (above).

Wellford-Duncan Water District (SJWD), Woodruff Roebuck Water District (WRWD), Spartanburg County, and Spartanburg County NRCS.

Upstate Forever has engaged in a variety of public outreach methods to encourage landowner participation in the project. In addition to our traditional landowner outreach methods (e.g. promotion through project partners, targeted mailings, social media, and presentations) Upstate Forever teamed up



Image (left) of 6 acres of drip irrigation on muscadine field. Image to left shows the connection of the water line (blue)

with Greer CPW to conduct a robocall to local residents, advertising the septic repair program. The robocall was a great success, with Upstate Forever fielding over 95 calls from interested residents. This innovative outreach strategy contributed to the repair and/or replacement of 20 septic systems in the three watersheds (9 South Tyger, 10 Middle Tyger, 1 North Tyger) and the reduction of 4.83E11 bacteria a year from local waterways.

Reducing sediment pollution is one of the primary objectives of this grant project due to multiple biological impairments in these watersheds. In collaboration with the Spartanburg County NRCS office, Upstate Forever funded the installation of drip irrigation on six acres of muscadines at a local vegetable farm operation. By using drip irrigation on this property, the landowner is able



Pictures (left) of blue emitters installed at each post. Water is distributed from each emitter within a 10-foot radius of each post. This allows for most efficient application of water and fertilizer to the individual plants.

to reduce sediment and nutrient runoff from these fields while increasing the efficiency of his irrigation practice, thereby increasing crop yields. Based on this success, the landowner is interested in installing an additional 15 acres of drip irrigation on his peach orchard in Spring 2020.

Morse Park

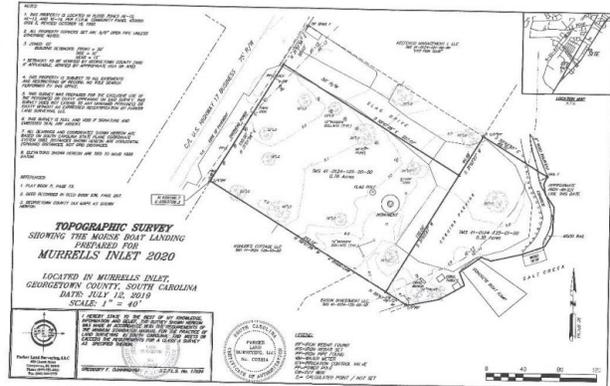
Murrells Inlet 2020 was awarded a 319 stormwater demonstration project grant at the end of 2018/beginning of 2019. The 319 grant was awarded to aid in reducing the amount of stormwater runoff entering the creek of Murrells Inlet at Morse Park Landing (located on Hwy 17 Business in Murrells Inlet, South Carolina). A variety of organizations and governmental agencies collaborated to establish the Murrells Inlet Watershed Plan. Outlined in the plan were



Morse Park and Morse Park Landing from the water. Issues with the landing and erosion caused by stormwater runoff at the landing can be seen

best management practices for reducing stormwater runoff into the creek at Murrells Inlet. This project was created around the practices outlined in the plan. Murrells Inlet 2020 is working to intercept surface runoff from the driveway and parking areas servicing the Morse Park Area with a bioretention system that will remove stormwater pollutants preventing them from entering Murrells Inlet. The project will create a treatment train for water quality, including pervious parking, a vegetated swale, and a bioretention area. Murrells Inlet 2020 is working with Georgetown County very closely on this project and has the support of the Surf Rider Foundation and The Coastal Waccamaw Stormwater Educators Consortium.

In 2019, Murrells Inlet 2020 surveyed the area and signed a contract with The Earthworks Group to begin the engineering phase of the project. Once engineered and permitted, Murrells Inlet 2020 will work closely with Georgetown County on construction. Once the construction of the treatment train, swale, and parking area are complete, Murrells Inlet 2020 will work with volunteers and the Surf Rider Foundation to complete the planting of the rain garden and the park area itself. This will include native plants that need little to no maintenance.



The survey of Morse Park Landing and Morse Park that was completed by Parker Land Surveying. This survey is being used by The Earthworks Group to complete engineering.

Hog Inlet

The Waccamaw Regional Council of Governments was awarded a 319 grant to reduce fecal coliform bacteria in the Hog Inlet-Dunn Sound Creek watershed in 2018. The Hog Inlet-Dunn Sound Creek Watershed Plan, completed in 2018, found that none of the monitoring sites in the watershed met the SCDHEC standard for fecal coliform bacteria. The purpose of this 319 grant is to implement recommendations from that plan and reduce levels of fecal coliform bacteria in the watershed. More specifically, this will be achieved by reducing reliance on malfunctioning septic tanks, increasing the population of harvestable oysters, reducing stormwater runoff impacts on water quality, and enhancing public awareness.

The project is still in its early stages, but Horry County Stormwater Management, the City of North Myrtle Beach, Horry Soil and Water Conservation District, and Coastal Carolina University are partners on the project. A public meeting was held on October 8, 2019 to meet with residents and explain how to connect homes to existing sewer lines or repair septic systems. Partners also met with private septic system contractors on October 21, 2019 to provide information about the 319 grant and to seek their involvement with assisting homeowners.



Potential site for oyster reef restoration

Additionally, oyster shells are being collected to recreate oyster beds in the Cherry Grove Beach area. Finally, a few streets are in the process of being selected for repaving with pervious materials. Much of the preliminary work was completed this year, so grant activities will continue in 2020.

Shaws Creek – Land Conservation

The City of Aiken was awarded a nonpoint source grant to implement land conservation easements to protect water quality in Shaws Creek Watershed, a source water for the City’s water treatment plant. Initially, the stakeholders completed a prioritization of parcels in the watershed based on factors such as stream length, acres of NWI wetlands and NRCS hydric soils, soil erodibility, slope, proximity to the water treatment plant, parcel acreage, dominant land coverage, proximity to Mason Branch reservoir, proximity to arterial road, and proximity to MS4 or Town of Trenton. The top scoring 100 parcels were prioritized for conservation easements, and the list was further prioritized for recruitment efforts to the top 50 parcels through a review of ownership, land use, and connections among stakeholders.



Discussions with landowners about conservation easements at watershed meetings

A set of two mailings were sent to these prioritized 50 parcels—first a letter explaining the land conservation program grant and later a “save the date” mention of an upcoming meeting (with a barbeque dinner provided by Aiken Land Conservancy). A week later, a second mailing was sent as a post card invitation to the barbeque meeting, held at a church in the watershed. Twelve landowners (representing nine parcels in the watershed) attended the meeting where Aiken Land Conservancy and Upper Savannah Land Trust presented how conservation easements work, the benefits to the landowner, and the benefits to water quality. The landowners had great discussions with stakeholders and several mentioned plans to discuss the possibility with their tax professionals. Stakeholders are in the process of following up with the landowners who attended the meeting and pursuing additional contacts within the watershed. The project goal is to obtain approximately seven conservation easements on priority parcels in Shaws Creek Watershed.

One side of Trifold Brochure sent to priority landowners

XII. WBP IMPLEMENTATION – PROJECTS BEGINNING IN FY19

Kingston Lake with Crabtree

To reduce fecal coliform in the Crabtree Watershed, this project will implement agricultural BMPs such as manure and pasture management, streambank fencing, alternative water sources, and grazing systems. The project will also repair or replace failing septic systems or tie-in to sewer, if available. Over 70 septic repair/replacement applications have already been received by the project lead organization. Education and outreach will go hand-in-hand with both project efforts.

Congaree Creek – Phase II

To reduce bacteria loading in the Congaree Creek Watershed, this project will repair or replace approximately 70 failing septic systems or tie-in to sewer, if available. This project will also educate residents in the watershed about proper septic system maintenance, the causes and results of bacterial contamination, and how they can prevent it by properly maintaining their septic system.

North Saluda River

To reduce turbidity due to sediment runoff in the North Saluda River and Saluda Lake Watershed, this project will implement agricultural BMPs for crop farms and educate farmers about the benefits of and methods for reducing soil loss by installing BMPs.

May River – Phase IV

To continue to reduce fecal coliform loading in the May River Watershed, this initial project phase will eliminate 49 septic systems by constructing sanitary sewer connections for individual households in four neighborhoods. This initial project is part of a larger multi-year, multi-phased sewer connection project to eliminate all septic systems in the Town of Bluffton's jurisdiction.

XIII. SOUTH CAROLINA COASTAL NONPOINT SOURCE PROGRAM

The Coastal Nonpoint Program (CNP) is an extension of the statewide Nonpoint Source Management Program (319 Program) and is intended to focus on nonpoint source issues affecting the eight coastal



zone counties. The CNP program is directed toward the implementation of management measures, including best management practices, in seven specific areas: public education and outreach, watershed protection, urban activities, monitoring and tracking, marinas, hydromodification, and wetlands. By fostering coordinated research, outreach, and management activities, the CNP enhances state and local efforts to manage nonpoint source pollution in coastal South Carolina. The South Carolina CNP received

final approval status from NOAA and EPA in February 2008. The South Carolina CNP currently leverages ongoing efforts funded through Coastal Zone Management Awards, as well as existing state and local programs, to ensure continued implementation of management measures.

Since its inception in 1992, the Adopt-A-Beach program, administered by the SCDHEC Office of Ocean and Coastal Resource Management (DHEC OCRM), has encouraged volunteers to take an active role in preserving South Carolina's beaches. In 2014, DHEC OCRM launched *MyCoast South Carolina*, a web and mobile application designed to engage the public, visualize the impact of coastal hazards, collect data, and enhance awareness of coastal vulnerability among decision-makers, stakeholders, and the public. In 2016, the Adopt-A-Beach program was incorporated into *MyCoast* with the addition of the [Beach Cleanup tool](#). During FY 2019, Adopt-a-Beach groups held 255 beach cleanup events, logging 1,475 volunteer hours removing garbage and debris.



In FY 2019, over 1,100 pounds of debris were removed from South Carolina beaches.



DHEC OCRM continues to participate as a member of the SC Clean Marina Program. The program is coordinated by the National Marine Manufacturer's Association South Carolina and consists of staff members from DHEC OCRM, SC Department of Natural Resources, and SC Sea Grant. The team is responsible for reviewing Clean Marina applications, conducting site inspections, meeting marina/boatyard representatives, and providing awards and recognition to owners of facilities that meet the Clean Marina criteria. By meeting the environmental performance criteria, a certified marina can qualify to fly the Clean Marina Flag to attract boaters to their facilities. Through 2019, there are 11 marinas that have met the stringent qualifications of the program.

XIV. SOUTH CAROLINA FORESTRY COMMISSION BMP COMPLIANCE PROGRAM

The SC Forestry Commission implemented a statewide, coordinated Best Management Program (BMP) for forestry-related activities. The BMP program focused on a proactive approach to preventing NPS pollution



by offering voluntary courtesy BMP exams to forest landowners, foresters, and forestry operators. Forestry operations were located through aerial detection, voluntary notification, and complaint calls. Sedimentation of streams is one of the primary forms of NPS pollution nationwide. The forestry BMPs require trees and vegetation to be left along a stream, wetland, or lake adjacent to a forestry harvesting or planting site where activities may result in soil disturbance.

Courtesy BMP exams include site-specific recommendations regarding BMP implementation. After the forestry operation is completed, final on-site inspections are conducted to determine if the appropriate BMPs were implemented on the site. On sites where damage has already occurred, recommendations for mitigating the damage are made. Close cooperation with SCDHEC is essential on sites referred for enforcement action and in correcting problems to ensure compliance with water quality requirements.

From September 2018 to August 2019, the SC Forestry Commission closed out 232 sites. Two harvesting operations were out of compliance with applicable Best Management Practices. The result is a 99.14% compliance rate on sites visited by a BMP Forester.

Of the 232 sites reported, BMPs were properly applied by those responsible on 178 sites, BMP Foresters provided recommendations during the operation to assist with compliance on 41 sites, BMP Foresters noted deficiencies and requested additional action on site to achieve compliance on five sites, and eight sites required remedial action or a return visit by the operator to bring the site into compliance.



The 232 sites visited combined for 13,954 acres of timberland harvested, including clearcuts and thinnings. Approximately 52.4 miles of perennial, intermittent, and ephemeral streams were protected by SC BMPs during this grant period with 35.8 miles of forested Streamside Management Zones remaining intact along perennial streams.

In the month of August 2018, 31 sites were closed out. No sites were found to be out of compliance with applicable BMPs. Of the 31 sites reported, BMPs were properly applied by those responsible on 20 sites, BMP Foresters provided recommendations during the operation to assist with compliance on ten sites, and the BMP Forester noted deficiencies and requested additional action to achieve compliance on one site.

XV. CHAMPIONS OF THE ENVIRONMENT PROGRAM



In the 2018-2019 school year, several Champions of the Environment Grant Award winners focused on nonpoint source pollution reduction through sustainable gardening and habitat restoration projects.

Students at Cape Romain Environmental Education Charter School engaged the community of McClellanville to eliminate marine debris for their “Keep it Clean” project. Middle schoolers conducted weekly trash sweeps of the creek using kayaks. They worked to ban all plastic bags, straws, and bottles at school and encouraged the adoption of reusable water bottles. Students also educated the community about how deadly plastic bags are to marine life, and they started a program that allows

families to turn in their plastic bags to be recycled in exchange for reusable grocery bags.

Students at Cainhoy Elementary School learned that pesticides produce harmful side effects to the environment and prevent insect-eating birds from visiting backyard gardens. The school’s “Year of the Bird” project provided habitat for insects and birds and raised awareness about the environmental benefits of organic gardening. First graders learned about the habitat of the American Kestrel and the impact of pesticides on the environment. They established an organic, pesticide-free garden, built birdhouses, and hung bird feeders.



Burke High School students partnered with the South Carolina Department of Natural Resources (SCDNR) to restore local oyster reef habitats by planting cordgrass and installing oyster castles along Charleston’s shorelines. Students harvested cordgrass seedlings from the marshes in December and cultivated them in an ebb-and-flow hydroponics system over the winter. They also bagged oysters over the winter. In the spring, SCDNR supervised the planting of the cordgrass seedlings and the deployment of the oyster bags into the riverways to create new oyster reefs that protect the cordgrass. The restoration of this habitat will result in long-term water quality improvement and will support local fisheries and the economy.

For 26 years, Champions of the Environment has rewarded environmental awareness and action in South Carolina’s kindergarten through 12th grade students. Champions is sponsored by DHEC, International Paper, and SCE&G, with assistance from the Environmental Education Association of South Carolina. For more information, visit the Champions Web site at: scdhec.gov/champions.

SOUTH CAROLINA

NONPOINT SOURCE PROGRAM CONTACTS

South Carolina Department of Health and Environmental Control



XVI. PROGRAM CONTACTS

Carmony Corley

SC Nonpoint Source Coordinator

(803) 898-4401

corleyc1@dhec.sc.gov

Karin Skipper

Watersheds and 319 Section Manager

(803) 898-4187

skippekb@dhec.sc.gov

Jana Baxley

319 Grants Administrator

(803) 898-4213

baxleyjs@dhec.sc.gov

For more information, visit the nonpoint source website: www.scdhec.gov/watersheds



Healthy People. Healthy Communities.

Bureau of Water
2600 Bull Street
Columbia, SC 29201

Submitted to EPA in fulfillment of the requirements of Section 319 of the Clean Water Act.