

Building Strong Collaborative Relationships for a Sustainable Water Resources Future:

STATE OF SOUTH CAROLINA
SUMMARY OF STATE WATER PLANNING

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The findings contained in this report are based on the information collected from the literature search and interviews for this initiative and should not be construed as an official Department of the Army position, policy or decision unless so designated by other official documentation.

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1. STATE/REGIONAL WATER PLANNING STATUS

The Water Resources Planning and Coordination Act (§49-3-10 to 49-3-50, Code of Laws of South Carolina (C.L.S.C.)), which provides the legislative basis for the development of the South Carolina Water Plan (SCWP), directed the Department of Natural Resources (DNR) to develop a statewide water resources policy.

This policy consists of two parts: an overall assessment of the state's water resources, and guidelines and procedures for managing those resources. The first comprehensive assessment of the state's water resources was completed in 1983 (WRC, 1983) entitled "South Carolina State Water Assessment". The publication summarized key water resource information and trends for the state as well as 15 river basins including water use, surface and groundwater availability, water quality, water problems and opportunities, and identified numerous special water resource issues. The DNR is currently updating the State Water Assessment and expects completion by mid-2009. The first version of the SCWP was published in 1998 (Cherry and Badr, 1998). Its purpose was to "establish guidelines for the effective management of the State's water resources to sustain the availability of water for present and future use, to protect public health and natural systems, and to enhance the quality of life for all citizens."

While the 2004 SCWP provides guidance in the form of a series of recommendations, it does not layout an explicit implementation framework, delegate responsibility to federal, state, or regional entities, nor provides a timeframe for recommendations to be carried out. The plan recommended a plan updates every five years. DNR plans to initiate revising the State Water Plan following completion of the new State Water Assessment in 2009.

Both the 1983 and upcoming State Water Assessment are comprehensive but do not include in-depth analyses of water quality. Water quality planning is the responsibility of the Department of Health and Environmental Control (DHEC).

2. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES

Responsibility for water resources management in South Carolina is shared between the DNR's Land, Water and Conservation Division (LWCD) and DHEC's Bureau of Water. LWCD is the primary planning agency while DHEC is the primary regulatory agency.

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3. WATER MANAGEMENT VISION AND GOALS

The purpose of the SCWP is “to establish guidelines for the effective management of the State’s water resources to sustain the availability of water for present and future use, to protect public health and natural systems, and to enhance the quality of life for all citizens.”

South Carolina’s goals for water resources management, as stated in the SCWP, are:

- *To ensure that water of suitable quality and quantity is available for use when and where needed.*
- *To manage the quantity and quality of both surface and ground water in an integrated manner to protect, maintain, and enhance the overall resources.*
- *To use the South Carolina Water Plan to provide guidance for regional and local water planning efforts.*
- *To develop interstate agreements with North Carolina and Georgia for the protection of water quality and quantity and for equitable allocation of surface and groundwater.*
- *To allocate surface and ground water to ensure the long-term availability of the resource.*
- *To have a drought management and mitigation plan that establishes actions and procedures for different drought levels in order to minimize drought impacts.*
- *To manage water shortages so that all users would share the burden.*
- *To have a flood management and mitigation plan that establishes actions and procedures to minimize flood hazards and protect life and property.*
- *To protect freshwater and estuarine ecological functions and habitats.*
- *To regulate interbasin water transfers in a way that reflects the variability in water availability, respects the natural systems, and protects the source basin’s present and future water demands.*

- *To utilize advanced technologies, procedures, and practices to promote more efficient use of water and to maximize water availability.*
- *To develop a water-conservation ethic by providing educational opportunities and information to citizenry.*

The mission of DNR's Hydrology Section is to "provide guidance, counsel, and data to the State government and the general public for the beneficial use, conservation, and management of South Carolina's water resources." DNR's mission is "to serve as the principal advocate for and steward of South Carolina's natural resources." Its vision for the state is "an enhanced quality of life for present and future generations through improved understanding, wise use, and safe enjoyment of healthy, diverse, sustainable and accessible natural resources."

The agency plans to accomplish its mission and attain its vision by working diligently toward the following goals (DNR, 2009):

1. Enhance the effectiveness of the agency in addressing natural resource issues:
 - a. Broaden strategies to address the impacts of population growth, habitat loss, environmental alterations, overuse and other challenges faced in protecting, enhancing and managing diverse natural resources.
 - b. More effectively develop, coordinate, and integrate resource-specific conservation and management plans, research and policies within the agency.
 - c. Expand sound application of science for natural resource management and decision-making.
2. Improve the general operations of the agency:
 - a. Develop and implement department-wide operational plans that clearly connect all agency activities to specific goals and annual accountability reports.
 - b. Fully develop the agency's regional hub system.
 - c. Continue to develop and maintain modern, well-integrated information systems and technology throughout the agency.
 - d. Enhance and maintain effective communications throughout all levels of the agency.
 - e. Maximize efficiency of internal operations and business procedures.
 - f. Aggressively pursue increases in revenue, state and federal funding, and identify new funding sources to support accomplishment of our mission.
3. Create an agency environment that supports a dedicated, professional workforce:
 - a. Implement comprehensive workforce planning that is consistent with agency priorities.
 - b. Expand consistent, agency-wide employee training, retention, and compensation efforts.
 - c. Implement initiatives that improve employee morale and teamwork, instill a sense of pride in the agency, and emphasize the importance of its mission.
4. Enhance public trust and confidence in the agency:
 - a. Foster more effective communications, outreach, and partnering with the public and State Legislature.

- b. Develop strategies that address divergent public opinion and expectations concerning issues related to accessibility, use, and protection of natural resources.
- c. Optimize our customer service through regular monitoring of constituent needs, public opinion, and agency performance.
- d. Enhance natural resource education to provide the public with knowledge necessary in making informed natural resource decisions.

DHEC’s mission is, “We promote and protect the health of the public and the environment,” and their vision is, “Healthy people living in healthy communities.” DHEC provides services in four areas: health services, health regulations, environmental quality control, and ocean and coastal resource management. Department-wide goals related to water resources are listed in their “Strategic Plan 2005 to 2010”¹:

1. Increase support to and involvement by communities in developing healthy and environmentally sound communities
 - a. Increase support to develop healthy communities
 - b. Protect the public against food-, water- and vector-borne diseases
 - c. Promote a coordinated, comprehensive public health preparedness and response system for natural or manmade disasters or terrorist events
 - d. Work with local governments and communities to improve land use plans to balance growth and natural resource protection
2. Protect, enhance and sustain environmental and coastal resources
 - a. Protect the environment to improve public health and safety
 - b. Enhance environmental and coastal resources
 - c. Restore impaired natural resources and sustain them for beneficial use
 - d. Protect coastal and other sensitive areas

4. SCOPE OF WATER RESOURCES PLANNING AND MANAGEMENT

After a brief summary of the state’s water resources, the SCWP describes the status of water resources management programs and activities. It covers surface water quantity and quality, groundwater quantity and quality, drought management and mitigation, floodplain management and mitigation, basinwide management and interstate cooperation, and maximizing water availability. The SCWP concludes with a series of recommendations (81) in five categories: water resources management, surface water, groundwater, drought management and mitigation, and floodplain management and mitigation. A few of the recommendations are:

Water Resources Management

- *The effective management of South Carolina’s water resources is beyond the scope of any one agency or organization and will require cooperation and shared responsibility among Federal, State, and local agencies, as well as public and private parties.*
- *Management strategies must be flexible, responsive to trial, monitoring, and feedback, and should change in response to new scientific information and technical knowledge.*

¹ Goals 2, 3, and 5 are not related to water resources.

- *The State should work to establish a river basin advisory committee for each of its four major basins.*
- *In order to effectively manage the State's water resources, comprehensive and accurate monitoring of water use is needed.*
- *Preventing and reducing water pollution is the collective responsibility of all levels of government, agriculture, industry, landowners, and citizens alike, and it is best achieved at the watershed level, by enhancing stewardship, forging partnerships, and increasing public education and participation.*

Surface Water

- *To maximize water availability at all times and to protect human and economic needs, surface water use must be regulated.*
- *Desired flows and minimum required flows for streams should be established to protect public health and safety, maintain fish and wildlife, and provide recreation and navigation while promoting aesthetic and ecological values.*
- *Because Georgia and South Carolina share the Savannah River and its lakes, the States must work together to incorporate release schedules into the Corps of Engineers operating plans for these lakes.*

Ground Water

- *To protect aquifer systems and to ensure the long-term sustainability of the groundwater resources, the entire coastal plain province should be designated a capacity use area.*
- *Withdrawals should be managed so as to prevent degradation of aquifer water quality.*
- *A statewide water-table monitoring network should be established.*

Drought Mitigation and Management

- *All water suppliers and industries should prepare drought response plans, specifying system specific triggers and indicators, pre-drought planning efforts, water reduction schedules, alternate supply sources, and backup systems. These plans should be filed with and approved by the State Drought Response Committee.*
- *The state should have a drought management and mitigation plan to enhance current drought-related legislation and to help sustain all water uses in the state during water shortages.*

Floodplain Management and Mitigation

- *The state should oversee floodplain and floodway delineation and verify the hydrologic and hydraulic analyses used to make those decisions.*
- *An important goal of a floodplain management program should be to preserve natural floodplains, not only by limiting development in those areas but also by allowing flooding to occur.*

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In 1998 to 2002, South Carolina experienced a severe, multi-year drought. The current SCWP includes the experience and knowledge gained from that drought and also outlines a water-sharing strategy to relate lake inflows and levels to downstream releases and lake withdrawals. Since 2002, the state has continued to face a series of droughts. In South Carolina, the Governor does not have the authority to make drought declarations. Instead, the state addresses drought response and mitigation through legislation, such as the passage of the Drought Response Act that is aimed at public water suppliers. Implementation of local water conservation ordinances is the state's primary mechanism of responding to droughts. DNR provides municipalities with a model drought ordinance; however, adopted ordinances are not uniform from county to county. For example, some have mandatory ordinances while others have voluntary conservation ordinances.

Exacerbating the state's current drought conditions is its lack of a surface water withdrawal permitting system and, as such, there are no limits on surface withdrawals. For the past two years, DHEC has been pushing legislation to develop a system for water permitting. To assist DHEC, DNR has attempted to determine minimum flows but this been a challenge given an incomplete and unreliable data set.

Over the years, South Carolina's surface monitoring network has declined. Its groundwater monitoring network is stronger but requires additional and more reliable gauges. The state shares the cost of gauges with shareholders such as the USGS. Upcoming budget cuts may lead to an increased deduction in critical water resource monitoring.

In the western part of the state, water supply is tied to the management of the USACE Savannah River Lakes: Hartwell Dam and Lake, Thurmond Dam and Lake, and Russell Dam and Lake. Resources from the lakes are shared between South Carolina and Georgia. Both states rely on the Corps' management of dam releases to maintain minimum flows and meet water demands. South Carolina and Georgia meet regularly with Corps to discuss issues on the Savannah River. Hydropower generation, especially on the Hartwell and Russell Lakes, has exacerbated the impacts of droughts since the bullseye of the drought was centered over the upper river basin.

Besides the management and equitable allocation of water resources of the Savannah River and Lakes, South Carolina has other interstate water supply issues with both Georgia and North Carolina. The state is concerned with the rapid growth of the metro-Atlanta region and its increasing water demands. Saltwater intrusion into coastal aquifers underlying the Hilton Head area is due to overpumping by the city of Savannah. South Carolina's Attorney General has filed suit with North Carolina over interbasin transfers out of the Catawba River Basin and into the Pee Dee River Basin, which is affecting flows from these rivers into South Carolina.

Other water resources problems in the state are dealt with ad hoc. Since the state does not have a systematic way to address regional issues, it is generally the responsibility of local governments and municipalities.

5. PARTNERSHIPS, STAKEHOLDER, AND PUBLIC INVOLVEMENT

DNR is not required to hold public meetings, conferences, and workshops as part of the SCWP development process. However, the SCWP encourages forging partnerships and increasing public participation at the watershed level. DNR and DHEC currently partner with several federal, state, and regional agencies/entities, including U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the Federal Emergency Management Agency, the U.S. Fish and Wildlife Service, the U.S. Department of Agriculture's Natural Resources Conservation Service, the U.S. Geological Survey, South Carolina Council of Governments, and public and private electric and water utilities.. Public involvement is also solicited by DHEC in the development of watershed remediation and National Pollution Discharge Elimination System (NPDES) permitting.

The 2004 SCWP was completed almost exclusively without public involvement. Normally, DNR plans are developed under the guidance of a council or board that reviews and considers public comments and concerns. Future updates of the SCWP will incorporate more public involvement in the planning and development process.

6. PLAN IMPLEMENTATION STRATEGY

The DNR does not have regulatory authority. Therefore, plan recommendations are used as guidelines for DNR and DHEC actions in program activities and proposed legislation. Starting in 1991, DHEC began implementing the Watershed Water Quality Management Strategy. In this management strategy, all activities are coordinated by basin: monitoring, assessment, problem identification and prioritization, water quality modeling, planning, and permitting. The strategy divides the state into eight major drainage basins (Figure 1). The only official documents to come out of the assessment strategy are Watershed Water Quality Assessment (WWQA) documents. Watershed assessments are conducted on a 5-year, staggered and rotating schedule (Table 1):

- Monitoring—each year, two of the eight basins are monitored for additional water chemistry and biological information.
- Assessment/reporting—analyses of the data reveal problem areas and long term water quality trends. The following information is incorporated into the WWQAs:
 - Water chemistry information
 - Biological monitoring information
 - Physical characteristics
 - Natural resources
 - Growth potential
 - Nonpoint source (NPS) pollution control efforts
 - Water quality improvement activities
 - Point source dischargers
- Wasteload allocation—watershed modelers develop wasteload allocations for the waterbodies with the objective of determining assimilative capacities of streams. Public workshops are held to educate stakeholders about the watershed's water quality and to provide an opportunity for participation in the watershed assessment process.

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- Permitting—wasteload allocation are utilized in National Pollution Discharge Elimination System (NPDES) permit development for all point source discharges.
- Remediation—remediation actually occurs throughout the entire 5-year cycle.
- Remediation activities include outreach and education activities, development and implementation of TMDLs, and coordination with other stakeholders on NPS pollution problems.

In addition to the Water Quality Monitoring Strategy, DHEC regulates many aspects of water supply, water quality, and natural habitats:

- Water quality certification (Regulation 61-101)
- NPDES and land application permits (Regulation 61-9)
- Water classification and standards (R61-68, R61-69)
- Dams and reservoirs safety (R72-1 to R72-9)
- Primary drinking water (R61-58)
- Environmental protection (R61-30)
- Groundwater use and reporting (R61-113)
- Interbasin Transfer of Water (R121-12)
- Construction in navigable waters (R19-450)
- Erosion and sediment reduction and stormwater management (R72-101, R72-300, R72-405)
- Total Maximum Daily Loads (R61-110)
- Underground injection control (Errata to R61-87)
- Wastewater facility construction (R61-67)

	Savannah and Salkehatchie	Saluda and Edisto	Catawba and Santee	Pee Dee	Broad
2006	Assessment, Reporting	Monitoring	Remediation	Permitting*	Wasteload Allocation
2007	Wasteload Allocation	Assessment, Reporting	Monitoring	Remediation	Permitting*
2008	Permitting*	Wasteload Allocation	Assessment, Reporting	Monitoring	Remediation
2009	Remediation	Permitting*	Wasteload Allocation	Assessment, Reporting	Monitoring
2010	Monitoring	Remediation	Permitting*	Wasteload Allocation	Assessment, Reporting

Table 1. 5-year rotating schedule of DHEC’s Water Quality Management Strategy (DHEC, Nov. 17, 2008).

DNR administers the state’s Scenic Rivers Program according to the South Carolina Scenic Rivers Act of 1989 (49-29-10 to 49-29-230, C.L.S.C.). In the program, rivers and river segments are selected based on “unique or outstanding scenic, recreational, geologic, botanical, fish, wildlife, historic, or cultural values (49-29-30, C.L.S.C.)” There are three types of rivers in the program: natural, scenic, and recreational.

Management policies for the three types of rivers are (South Carolina Scenic Rivers Act 49-29-140, C.L.S.C.):

1. Natural rivers must be managed in a manner which:
 - a. Would best maintain and enhance those conditions which are attributed to wilderness type areas.
 - b. Would allow camping and river access only at designated public access areas.
 - c. Would allow certain public uses only within prescribed public access areas.
2. Scenic rivers must be managed in a manner which best maintains and enhances the scenic values of the river and the adjacent land while at the same time preserving the right of riparian landowners to use the river for customary agricultural, silvicultural, or other similar purposes.
3. Recreational rivers must be managed in a manner which would best maintain and enhance the scenic values of the river while at the same time preserving the right of riparian landowners to use the river for customary agricultural, silvicultural, residential, recreational, commercial, and industrial purposes

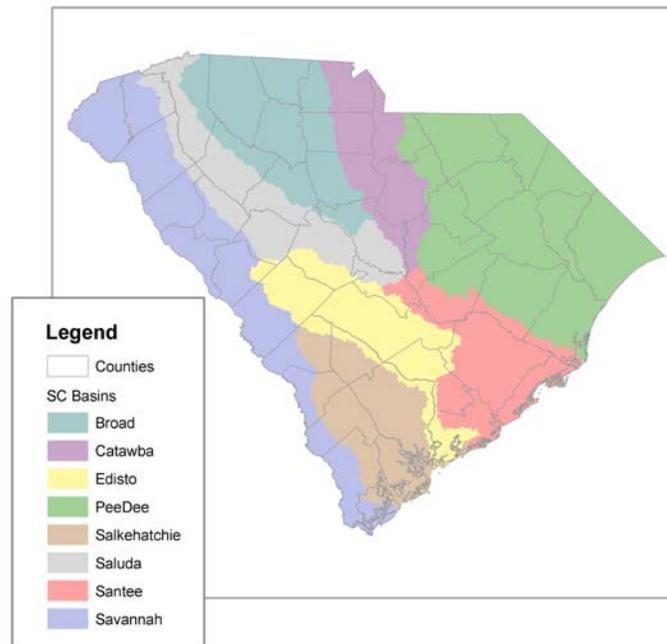


Figure 1. Major drainage basins in DHEC’s Water Quality Management Strategy (DHEC, Nov. 17, 2008).

DNR is responsible for developing a comprehensive water and related land use plan for each river in the program in coordination with each local scenic river advisory committee. These plans must (§49-29-160, C.L.S.C.) address the access and permitting of public electric, gas and communication utilities for all scenic river categories and general land and water use practices for certain specific scenic river categories.

7. OUTCOMES ASSESSMENT PROCESS

The SCWP states, “Both the Assessment and the Water Plan must be updated periodically, on the basis of changes in water demand and availability, and the development of new technologies and management strategies.” Following completion of the State Water Assessment in 2009, DNR hopes to initiate an update to the SCWP.

DNR maintains a strategic plan plus operational plan for each of its sections, including the Hydrology Section with deadlines and performance measures. DNR annually reviews its performance in its accountability report. However, strategic and operational plans and accountability reports are not available online.

DHEC also frequently reviews its progress towards meeting its departmental goals, which are outlined in their Strategic Plan 2005 to 2010. DHEC has also compiled a list of performance measures (unavailable online) for actions in its Strategic Plan based on national measures, such as Healthy People 2010 and the EPA Core Performance Indicators (DHEC, Sept. 2008). DHEC’s Strategic Plan Council provides oversight on aspects of the implementation of the plan and monitors performance and operational planning throughout the agency.

In its FY2007 to 2008 Annual Accountability Report, DHEC recognizes that maintaining sustainable water supplies remains a key challenge:

The southeastern United States is experiencing the stressors of a rapidly growing population. The Pee Dee area and coastal counties of South Carolina have seen groundwater levels decline. Many of the state’s rivers and lakes have experienced inadequate flows during dry periods. South Carolina has a groundwater use permitting and reporting program and a surface water-use reporting program. There is a need to establish a surface water permitting program. The state also shares surface and groundwater resources with the neighboring states of North Carolina and Georgia. DHEC continues to work with these states and interested stakeholders to address water sustainability issues.

Both DHEC’s Strategic Plan and Accountability Report do not mention alignment of goals with the SCWP.

8. NEEDS, CHALLENGES AND CRITICAL PRIORITIES - INTERVIEW INSIGHTS

South Carolina’s water resources issues/needs are:

- Managing response and water conservation during droughts
- Uncertainty on how to address climate change
- Better coordination between DHEC and DNR
- Need for a comprehensive plan and planning process
- Permitting to regulate surface water withdrawals
- Better management of USACE’s Savannah River Lakes
- Increased funding and cost-share partners to maintain/re-establish the state’s surface water monitoring network

Droughts have plagued South Carolina for the past several years and have been the primary focus for water resources management in the state. To lessen the impacts of drought, the state needs the cooperation of the USACE over the management of the Savannah River Lakes, which supplies water to the western half of the state. Drought conditions have been most extreme near the upper reservoirs, where the generation of power on the Hartwell and Russell has exacerbated drought impacts. In addition, the state needs more regulatory authority on water allocation and water conservation activities during droughts. While DNR provides planning documents to municipalities, local ordinances are often voluntary or not implemented during droughts and vary dramatically in requirements across the state. DHEC is drafting the proposed legislation that will allow the state to establish a water permitting system, however, DNR is having difficulty in determining what the minimum flow limits should be given the lack of a complete and reliable data set. Therefore, the state will also need to obtain funding to expand and maintain its current surface water monitoring system.

Finally, South Carolina needs federal assistance in learning to effectively manage climate change. Currently, the state is monitoring climate change and is aware of its potential impacts but is unsure of how to proceed in mitigating it.

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