

Hydrology Section — Land, Water and Conservation Division

South Carolina Department of Natural Resources

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DNR

PROJECT: Savannah River Basin Comprehensive Study

OBJECTIVE: Improve water-resources management throughout the Savannah River basin

The Savannah River basin, which contains the entire Georgia-South Carolina border, is home to five of South Carolina's largest lakes, as well as several ecologically important areas, and is home to a number of endangered or threatened plants and animals. The upper basin is dominated by large reservoirs—Duke Energy's Lakes Jocassee and Keowee, and the U.S. Army Corps of Engineers' Lakes Hartwell, Russell, and Thurmond—that serve as a water supply for thousands of people, provide water needed for electricity generation, and are a recreational resource that has become an important part of the upstate economy. The lower basin is dominated by the Savannah River, which is important to both States for water supply and wastewater discharge, and includes several ecologically important areas, such as the Augusta Shoals and the Savannah National Wildlife Refuge. Because of its effect on lake levels in the upper basin and streamflow in the lower basin, the Army Corps of Engineers' management of Lakes Hartwell, Russell, and Thurmond, particularly during drought, has a significant impact on the water resources of almost the entire basin.

In 2000, the South Carolina Department of Natural Resources (DNR), Georgia Environmental Protection Division (GAEPD), and the Corps of Engineers began a multi-million dollar, cost-shared hydrologic study of the Savannah River basin, called the Savannah River Basin Comprehensive Study. The study included the derivation of 70 years of unimpaired stream flows, a water-use survey to identify water needs throughout the basin, and the development of a reservoir simulation model (HEC-ResSim). The new model and data were then used to evaluate the effectiveness of several proposed alternatives to the Corps' 1989 Drought Contingency Plan. The initial phase of the study, which was completed in 2006, resulted in a new Drought Contingency Plan.



The Corps of Engineers' Thurmond Dam on the Savannah River.

A second phase of the study, originally planned to begin in 2007, involved examining a number of issues that affect the hydrology of the basin, including further refinements to the Corps' Drought Contingency Plan, reallocating water storage and decreasing the volume of the existing flood-control pools of the Corps' lakes, and developing a better understanding of the instream flow needs in the lower basin. Budget reductions suspended the project, however, and little has been accomplished since 2006. To help restart the project, the Corps agreed in 2011 to allow the State sponsors (DNR and GAEPD) to meet their required monetary match using in-kind services rather than cash, and in 2013, The Nature Conservancy agreed to become a third sponsor of the project, helping to further reduce each sponsor's costs associated with the project.



The rare Rocky Shoals Spider Lily can be found in the Augusta Shoals area of the Savannah River.

The second phase of the study is now expected to begin in late 2013. Because of a reduced budget, this phase of the project will be scaled back to address only one major concern in the basin—drought management. During this phase, the current Drought Contingency Plan will be evaluated to determine if additional storage can be preserved in the lakes during droughts without having adverse effects on users and the ecosystem downstream. The study will use the HEC-ResSim reservoir simulation model to predict lake levels and river flows that would have resulted from each of six proposed alternative reservoir-operating scenarios during the most recent drought of record that occurred from 2007–2009, and then evaluate how these changes in lake levels and streamflows would impact the environment, economics, and recreational opportunities throughout the basin. If the study sponsors and the Corps agree that one of these proposed management plans improves upon the current Drought Contingency Plan, an environmental assessment will be completed, and that new Drought Contingency Plan will be implemented.

For additional information, contact Andrew Wachob (wachoba@dnr.sc.gov) or Joe Gellici (gellicij@dnr.sc.gov).