

## **Establishment of Instream Flows in North Florida**

***Gina Tillis***

National Weather Service  
Lower Mississippi River Forecast Center  
Slidell, Louisiana  
Email: <gina.tillis@noaa.gov>

The Suwannee River is an important resource to Florida and is an estuary of national significance. The river flows approximately 240 miles from its headwaters in the Okefenokee Swamp to the Gulf of Mexico, receiving spring contributions from the Floridan aquifer system as well as runoff from major tributaries, such as the Alapaha, Withlacoochee, and Santa Fe Rivers, in the 9,640 square mile drainage area.

The Suwannee River is the second largest discharging river in Florida and the major freshwater source to the estuary. A "bird's-foot" river delta has formed at the mouth of the river, where the Suwannee River subdivides into 4 major channels, as a result of the freshwater discharge and broad, shallow "low energy" coastal shelf. The discharge pattern of the river correlates closely with climatological conditions and the estuary is subject to mixed semidiurnal tides, with a typical tidal range of 3 feet at the river mouth.

Salinity levels in the estuary have been classified as intermediate with moderate variance, reflecting neither saltwater nor freshwater dominance. Freshwater inflow was identified as a dominant factor influencing salinity variability while meteorological events are important episodic influences (Orlando and others, 1993). Salinity levels in the upper estuary seem to be affected primarily by hurricanes and storms, as well as extreme low flows during droughts (Mattson and Krummrich, 1995; Tillis, 2000).

However, water resources of the Suwannee River are under increasing stresses from a variety of competing uses, including vital ecological functions, flood-water conveyance, and economic values. Water use in the basin is estimated to have quadrupled from about 75 million gallons per day (mgd) in 1965 to over 300 mgd in 2000. In order to protect the water resources of the State, Florida passed a statute in which instream flows are referred to as "minimum flows and levels" (Chapter 373.042, F.S.). This statute requires that minimum flows for all surface watercourses, and minimum lake and ground water levels be established to limit withdrawal impacts. Such impacts must not cause "significant harm" to the water resources and ecology of the area (Wade and Tucker, 1996).

The Suwannee River Water Management District's (SRWMD) priority water body for developing minimum flows and levels (MFLs) is the Lower Suwannee River, the river reach from the Santa Fe River confluence to the Gulf of Mexico. The SRWMD

and the U.S. Geological Survey, along with selected private contractors, are working together to collect the necessary data and develop appropriate tools for establishing suitable MFLs. The three components of the program are surface water and ground water hydrology, and biological factors. The SRWMD approach to setting MFLs for the lower Suwannee River is habitat based. Significant habitats in the lower Suwannee and estuary are being identified, and their functional relationships to changes in river flows established. The habitats under investigation include oyster reefs, coastal marshes, submerged aquatic vegetation, woody snag habitat, and forested floodplains. Multiple flows and levels representing the range of naturally occurring hydrologic conditions on the lower river will be established relative to habitat requirements.

SRWMD began data collection and research for the MFLs process in 1994 and anticipates rule adoption to begin in 2004. MFLs will be defined by some combination of flow rates, durations, and return interval. If the specified hydrologic statistic is not met, that flow or level is considered to have been violated. The SRWMD will utilize MFLs in decision-making processes impacting consumptive use, water shortage declarations, and water supply planning programs.

For more information on SRWMD's MFL program, see the District's web site at [www.srwmd.state.fl.us](http://www.srwmd.state.fl.us) or contact John Good at (386) 362-1001 or [good\\_j@srwmd.state.fl.us](mailto:good_j@srwmd.state.fl.us)

## References

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