

## **Protecting Water Quantity in the Marjory Stoneman Douglas Wilderness**

The lower 15% of the Everglades ecosystem and watershed have been designated as the Everglades National Park (ENP), and about 87% of ENP is designated the Marjory Stoneman Douglas Wilderness. The natural quality of the wilderness has been impacted by longstanding and pervasive upstream water manipulation. As an undeveloped area of land, it appears as wilderness, but ecologically is unnatural; in particular, related to water conditions. In the early 1900s, several uncoordinated efforts upstream of the ENP dredged canals to move water to agriculture and domestic uses, and away from areas where urban development was occurring. In response to unprecedented flooding during the 1947 hurricane season, Congress established the Central and Southern Florida Flood Control Project to systematically regulate the Everglades hydrology through 1,700 miles of canals and levees upstream of what is now designated wilderness. Little consideration was given to the ecology of the Everglades. Currently, the wilderness receives more water than natural in the wet season when developed areas in southern Florida are trying to prevent flooding. During the dry season, agricultural and domestic uses create a demand for water that results in significantly diminished flows entering the wilderness.

A key provision of Everglades National Park's 1934 enabling legislation identified the area as "...permanently reserved as a wilderness...and no development shall be undertaken which will interfere with the preservation intact of the unique flora and fauna and essential primitive natural conditions..." A critical goal to meet this mission is to replicate the natural systems in terms of water quantity, quality, timing, and distribution. Water resources are managed by the South Florida Water Management District, and state law includes a highest and best use provision for natural areas and ecological systems that includes a minimum flows and levels (MFL) baseline standard. Established in the 1960s, MFLs were designed to mimic 1940s conditions. Unfortunately, water flows in the 1940s had already been comprised, and were too low to support natural conditions. MFLs were revised in the early 1980s to address documented harmful impacts, and resulted in a MFL modification based on a rainfall-driven model, with supplemental water for certain conditions. A more updated rainfall-driven model was developed to mimic the natural system and will deliver 45% of natural flow and if it is working perfectly, 70%.

In the modern era, it is not possible to restore the ecosystem to a natural condition, but considerable time is being devoted to understand the ecosystem and replicate natural conditions to the greatest extent possible. An enormous effort is underway to modify current practices providing for agricultural and domestic needs in a way that also provides for the ecological needs of the wilderness. The fundamental question is: "How did hydrologic cycles drive ecosystem functioning prior to human activity?" Scientific investigation provides estimates, and applied science develops water management practices to mimic those conditions. Monitoring follows to determine if the management practices achieve the goal, and then management practices are modified if they do not. The scope of human activity in southern Florida means there will never be an independently functioning natural ecosystem. The goals set by management comes from a simple question with enormously complex implications: "how closely can the ecosystem function to the way it did prior to water modification?"

All rights, or allocations, to water for the Marjory Stoneman Douglass Wilderness were established through the legislative process. With the backing of science to approximate the water needs of the ecosystem, and delivered through pumps, floodgates, and retention ponds in a complex system of water control and dispersal above the wilderness, the wilderness is kept alive on life support, though still in a diminished condition. The NPS in cooperation with its partners further seeks opportunities to restore the ecosystem to the greatest extent possible.