



Hydrology and Ecology Go to Court

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The authors were involved in a high profile case in the United States District Court involving Lake Okeechobee and the Everglades Agricultural Area in the State of Florida. One of the central issues of the case rested on a theory that all navigable waters of the United States comprised one “unitary” water body, and as such, transfer of water from one navigable water to another did not require any permitting action. Should this theory have prevailed, great precedent would be set regarding inter-basin transfer of volumes of water capable of significantly impact to the ecologic structure and function of all involved basins. Furthermore, the impact would certainly have had demographic implications of great significance.

We were asked to serve as expert witnesses in the case charged with developing a strategy to demonstrate that three large irrigation canals were “meaningfully hydrologically distinct” (language from the U.S. Supreme Court opinion on a related case) from Lake Okeechobee, the second largest freshwater lake wholly in the continental U.S. Although a totally hydrologic approach could have been taken easily, it was thought better for the legal team to include an aquatic ecologic perspective, a true example of the linkage of the two disciplines into ecohydrology.

Together, an argument was crafted to explain to the judge how, in fact, the waters could in no way be “unitary” in character and that they were “meaningfully hydrologically distinct.” The fundamentals of the arguments rested on well known and established principles of physics, chemistry, and biology. It was incumbent upon the authors to educate the judge on how to think about hydrologic and ecologic principles. Issues of interest to the judge included a forensic assessment of the hydrologic and ecologic regime of the lake and the original Everglades system when the State of Florida first joined the U.S. While there are anecdotal archives that describe some elements of the system, there are few historical data from which to quantify the flow regime. Nevertheless, the authors worked with their legal team to fill in the blanks based on their knowledge of hydrology and ecology.

One of the most important lessons learned by the authors is the importance of participating in the public process. Often, scientists shy away from such matters. Many of the principles that were applied were researched long ago. No research papers were generated by the case, but many were used to solidify arguments. It was gratifying to the authors to realize that the work product of their disciplines could be applied in a cooperative manner to address an issue with such profound implications. It was a clear demonstration that ecohydrology, the linkage of hydrology and ecology, was much preferred as a way to address a complicated legal issue.