

A WATERSHED-BASED ENVIRONMENTAL AND REGULATORY DATA ANALYSIS SYSTEM FOR THE FOREST PRODUCTS INDUSTRY

John Beebe

A watershed-based data analysis system was created as a tool for forest product companies to better understand potential implications from environmental regulations. Also known as the Receiving Water Database (RWDB), this data system was designed with the purpose of assisting companies that own pulp and paper mills, wood product facilities, and commercial timberlands by assessing changes in water quality standards, aquatic life criteria, critical habitat designations, watershed-based permitting, and water resource management policies. Assessments using this database system have helped the industry as a whole by providing a unique enviro-regulatory perspective by combining environmental and regulatory information in a watershed-based GIS. The core of the hydrogeographical information is the interagency spatial product known as the National Hydrography Dataset or NHD, which allows for river and stream reach information to be analyzed in relationship to its drainage network.

One of the main functions of the data analysis system has been to support industry analysis and input into regulatory processes in areas where rivers and other surface waters have been identified as impacted from point and/or nonpoint sources. For example, the system played a key role for forest product companies operating in Florida by analyzing spatial information on water quality monitoring and nutrient ecoregions to address proposed numeric criteria for nitrogen and phosphorus, and the attainability of such criteria in different regions of the state (Figure 1). Another important use of the RWDB involved assessing the potential impact of nutrient loadings in areas where forest products and other industries operate, particularly in states with accelerated nutrient criteria development schedules. In response to similar regulatory initiatives, the tool has also been used in various regional and state analyses to advise forest product companies that may become involved in or need to respond to TMDL (Total Maximum Daily Load) development, especially for manufacturing facilities that are subject to changes in their water discharge permits.

In response to Gulf of Mexico hypoxia, another use of the tool involved an industry analysis of nutrients in the Mississippi River basin to estimate the proportion of industry loadings in watersheds relative to other sources. This analysis concluded that the majority of nutrients that enter the river were primarily from agriculture, while only a very small fraction were associated with the forest products industry. Other research using the RWDB involved an assessment of regulatory changes pertaining to aquatic life criteria by evaluating different forms of streamflow statistics to be used in a proposed water withdrawal policy. The analysis compared the frequency of critical flow levels for various river systems in the Southeast U.S., and demonstrated that low flow conditions in many areas were part of a normal, natural variation for many river systems in which industry facilities and commercial timberlands operate. Results from this analysis had important biological implications, and the conclusions were helpful in shaping policies that put water withdrawal permits on a more rational, scientific basis (NCASI 2009).

The system has also supported the establishment of water quality studies including one for an experimental watershed in Louisiana (Ice and others 2010, Xu and others 2008) which involved combining spatial information and research objectives for investigating dissolved oxygen patterns in response to silvicultural best management practices. The database has also been used to evaluate potential regulatory changes involving threatened and endangered species (including the Atlantic Sturgeon and the Altamaha Spiny mussel), and the current system is being used in conjunction with an ongoing long-term receiving water study to evaluate biological conditions and adaptations of aquatic life in response to anthropogenic stressors. Periodic revisions to the framework of this database system have been and will continue to be made to make the tool a more efficient and comprehensive environmental data resource for the forest products industry.

LITERATURE CITED

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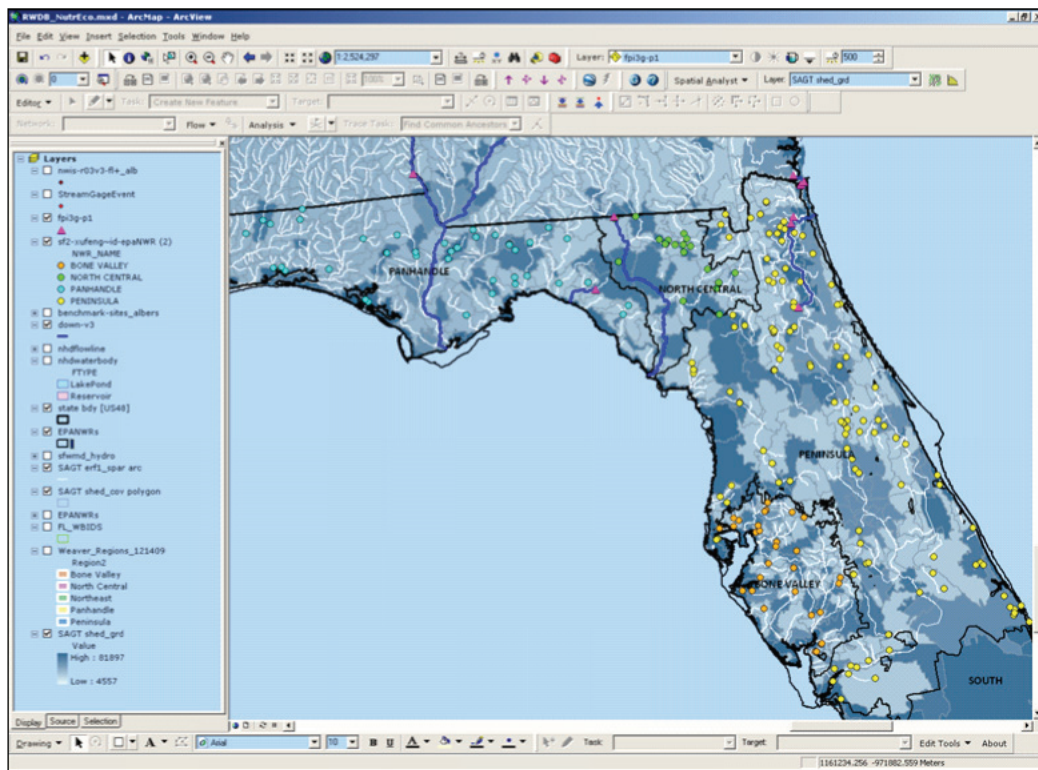


Figure 1—The watershed-based analysis system is designed to identify the industry's involvement in areas where waters that are subject to changes in water quality regulations. In this case the tool was used to evaluate water quality data in response to numeric nutrient criteria proposed for different ecoregions of the state.