

## **A Potential of Water Quality Trading in Jordan Lake Watershed, NC**

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**Abstract.** More than half of the lakes, reservoirs, and ponds in the United States are threatened or impaired for their designated uses; this problem is mostly due to nutrients (Selman, et al 2009). Jordan Lake watershed in North Carolina (NC) is one of those lakes which is contaminated with nitrogen. A Water quality trading (WQT) policy has been suggested to solve the water quality issue in this lake. The WQT market, like other markets, needs prerequisites such as enough credit supply and demand to be successful. If the credit supply and demand cross each other, form a market equilibrium, an ideal (frictionless (Smith, et al., 2012)), or a marginal market will occur; otherwise, the market will not exist. In this study, a unified WQT model is designed for Jordan Lake, NC. The main components of the unified model are supply and demand. To investigate the success of WQT programs in Jordan Lake, wedges were added to supply and demand side of the model. Wedges are elements that impede achieving an ideal market and include how the baseline is established, innovation premiums to entice producers to participate, trading ratios to account for uncertainty, and transaction costs. The outcome of the model shows that society's welfare will drop by \$793 per trade if four wedges we included are not overcome. This study is designed to improve the chance of having a successful WQT program for the Jordan Lake.