B. EVERETT JORDAN RESERVOIR WATER SUPPLY NUTRIENT STRATEGY HISTORY AND RULEMAKING BACKGROUND

(from the NC Division of Water Quality website)

The proposed B. Everett Jordan Reservoir Water Supply Nutrient Strategy is a comprehensive set of rules designed to reduce nutrient over-enrichment in Jordan Lake and restore it to full use. Jordan Lake is a multi-use impoundment located in the piedmont region of central North Carolina in the upper Cape Fear River Basin. It contains large portions of the populous Triangle and Triad regions as well as significant amounts of pasture and other agricultural lands. The Reservoir was commissioned for the purposes of flood control, downstream water quality, fish and wildlife conservation, recreation, and water supply. It was created in 1983 by the damming of the Haw River a short distance upstream of its confluence with the Deep River. Development of the Jordan nutrient strategy has been a multi-year effort with extensive stakeholder involvement, dating back to lake modeling begun in the late 1990s. The following is a brief overview of the need for and the development and content of the Jordan nutrient strategy.

Lake Water Quality Problems

Jordan Lake has been consistently rated as eutrophic or hyper-eutrophic since its impoundment in 1983. "Eutrophic" is an over-abundance of nutrients in the lake, primarily nitrogen and phosphorus, which may result in algal blooms and poor water quality. Nutrients make their way to the lake from sources such as wastewater discharges, rainfall runoff from agriculture, and stormwater runoff from new and existing developed lands throughout the entire Jordan watershed. Excessive nutrient inputs drive excessive growth of microscopic algae, which imparts a greenish, murky appearance to the water, causes taste and odor problems in potable water, and robs the water of oxygen, stressing or killing fish and other aquatic life. Excess nutrients also favor the growth of undesirable algae that does not support the food chain and can release toxins into the water. While not necessarily making the lake unfit for fishing, swimming or drinking uses, excess nutrients are impacting these uses, and undesirable algae are present in the lake. While only one fish kill has been reported to date, taste and odor problems prompted Cary to add chemical treatment to its drinking water process and unsightly, smelly water deters swimmers, boaters, and other sportsman.

Lake Water Quality Management History

The state began taking actions to address the nutrient problems early in the lake's history. The Environmental Management Commission (EMC) designated the Reservoir a Nutrient Sensitive Water (NSW) the year of its impoundment, and imposed phosphorus limits on wastewater dischargers. The lake did not respond to these controls, and in 2002, the EMC determined that the Upper New Hope arm was impaired after it exceeded the State's chlorophyll-***a*** standard. The rest of the lake exceeded the standard in 2006. The Haw River arm also exceed the pH standard in 2006. Both chlorophyll-***a*** and pH are used as indicators of excess nutrients in waterbodies. A fuller history of the lake's water quality and management actions is captured in the Report of Proceedings.

Regulatory Mandates

Several pieces of key legislation direct the EMC to address Jordan Lake's impairment. The Clean Water Responsibility Act of 1997, often referred to as House Bill 515, requires the EMC to establish improvement goals for nutrient-impaired waters, and to develop and implement management plans that entail sharing of responsibility for reducing nutrient inputs to these waters between point sources and nonpoint sources in a fair, reasonable, and proportionate

manner. A later law, Session Law 2005-190 directs the EMC to adopt permanent rules to establish and implement nutrient management strategies to protect drinking water supply reservoirs. In addition, requirements of the federal Clean Water Act were set in motion when the lake became impaired, including the need to set load reduction limits for point and nonpoint sources, known as a total maximum daily load (TMDL), and enforce discharger limits.

Rulemaking Process

To comply with House Bill 515, Haw wastewater dischargers developed a reservoir model in the late 1990s to estimate the lake's nutrient reduction needs. The EMC approved a reservoir model in 2002. Beginning in 2003, the Division of Water Quality (Division) conducted a 1½-year stakeholder meeting process, facilitated by the Triangle J Council of Governments, to seek consensus on nutrient loading goals, discharge allocation methods, and a conceptual nonpoint source strategy. In 2005, the Division held public meetings and solicited public comments on a rules framework. The Division then drafted a detailed set of rules, and held extensive technical stakeholder meetings through 2006 that resulted in rule refinements.

The formal rule-making process began when the rules were published in the June 15, 2007 NC Register (pg 2258), and a 90-day public comment period followed. This included three public hearings held in different locations in the watershed. Following the comment period, five Hearing Officers, all members of the EMC, deliberated for eight months over changes needed to address the comments received. The EMC adopted a revised set of rules in May 2008. The adopted rules and more information on this process can be found in the Report of Proceedings provided to the EMC.

In June 2008, the rules were brought before the NC Rules Review Commission (RRC) as required by law. The RRC reviewed and approved the rules over the course of five meetings, with the last approvals on November 20, 2008. A large number of technical changes were made to the rules in response to objections from the RRC, but the content of the rules remains essentially unchanged. These are the final rules in a version that shows the changes made since the public comment period.

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The 2009 Regular Session of the NC General Assembly produced the following outcomes regarding the Jordan nutrient rules.

- Eight of the thirteen rules were unchanged. They became effective the last day of the session, Aug. 11, 2009.
- Four of the remaining five rules - New Development Stormwater; Riparian Buffer Protection; Wastewater; and State and Federal Stormwater - saw varying levels of revision but were also effective as of Aug. 11, 2009,
- The Existing Development Rule was replaced in full by session law requirements and was effective as of June 30, 2009,

The revisions mentioned in the above bullets were enacted through two bills. The final Session Laws are:

Session Law 2009-216 (House Bill 239) was signed by the Governor on June 30, 2009. It does the following:

- Replaces the entire Stormwater Management for Existing Development Rule (15A NCAC 02B .0266).
    - Requires local governments to submit Stage 1 adaptive management programs to DWQ by December 31, 2009.
    - Calls for lake impairment-triggered Stage 2 programs, which would involve load-reducing measures for existing development similar to the requirements of the original rule. The need for Stage 2 programs would be determined by water quality monitoring results for Jordan Lake provided by DWQ starting in 2014 for the Upper New Hope Arm and 2017 for the Haw and Lower New Hope Arms.
    - Calls for modifications of Stage 2 programs in the Upper New Hope Arm if water quality monitoring results show that nutrient-related water quality standards are still not being achieved in the arm by 2023. The modifications would involve more stringent load-reducing measures.
    - Requires the establishment of a Nutrient Sensitive Waters Scientific Advisory Board that will be tasked with identifying management strategies to reduce nutrient loading from existing development, evaluating the feasibility, costs, and benefits of the strategies, developing an accounting system for assignment of nutrient reduction credits for the strategies, and identifying the need for any improvements or refinements to modeling and other analytic tools used to evaluate water quality in nutrient-impaired waters and nutrient management strategies
- Changes the nitrogen compliance date in the Wastewater Discharge Rule (.15A NCAC 02B .0270) from the beginning of the fifth full calendar year (2014) to 2016

Session Law 2009-484 (Senate Bill 838) was signed by the Governor on August 26, 2009. It amends SL 2009-216 by adding provisions addressing three other rules:

- Stormwater Management for New Development (15A NCAC 02B .0265):
    - Raises the offsite offset thresholds from 4 and 8 lb/ac/yr to 6 and 10 lb/ac/yr for residential development and commercial/industrial/muti-family development respectively, while adding a minimum onsite treatment requirement of one BMP that achieves 85% TSS for all development that doesn't meet loading targets;
- Stormwater Requirements for State and Federal Entities (15A NCAC 02B .0271):
    - Changes the existing development requirements for state and federal entities to require lake impairment-triggered nutrient reduction programs similar to those required for local governments under S.L. 2009-216.
- Protection of Existing Riparian Buffers (15A NCAC 02B .0267):
    - Requires a 30-day public comment period prior to EMC approval of alternative maps approved by the Geographic Information Coordinating Council. Such maps would be used for identifying streams that would be subject to buffer requirements.
    - Clarifies that the rule shall apply to activities that are conducted within, or outside of with ***hydrologic*** impacts upon riparian buffers.

While the timeframes for rule compliance are now set in motion, the session laws also require the EMC to adopt all of the changes into new or amended rules with the exact content of the session law, whereupon the session law will sunset. These actions will not alter the implementation timeframes already set in motion, but will leave all of the Jordan requirements embodied in one location, the set of EMC rules.

Strategy Content

The strategy is designed around nitrogen and phosphorus percent reduction goals for each of the three arms of Jordan Reservoir. Separate goals were needed for each arm because of the hyrdrologically distinct behavior exhibited by each arm and the different inputs from each watershed. The strategy targets all of the major nutrient contributors throughout the watershed. In their final form, there are 13 rules in all. They include a purpose and goals rule, a definitions rule, rules for each major source type, and a trading rule. In terms of individual sources, the Wastewater Discharge Rule sets annual mass allocations for existing wastewater dischargers in the watershed. Several rules require stormwater controls to reduce nutrient load coming from new and existing developed lands, including state and federally owned lands. There is also a rule that addresses fertilizer application throughout the watershed. The Agriculture Rule establishes collective nutrient reduction goals for all persons engaging in agricultural operations in the watershed. The strategy also contains several rules addressing the protection and mitigation of impacts to riparian buffers. Most of the rules require reductions to be met within nine years or less, with the exception of the Existing Development Rules, which call on local governments to propose load reduction timeframes to achieve the percentage goals.

While the strategy is similar in form to previous nutrient strategies implemented in the Neuse and Tar-Pamlico River Basins, differences from those strategies include stormwater requirements for ***all*** local governments in the watershed, ***local*** implementation of buffer rules, a rule requiring local governments to achieve loading reductions from ***existing*** developed lands, a separate stormwater rule for s***tate and federal entities***, and a separate rule outlining a ***trading*** framework to maximize options for cost-effective reductions. The existing development rule was included because of the substantial nutrient loading coming from existing development in the watershed. The rules also include the concept of adaptive management, given the combination of the long-term nature of any such restoration initiative, the potential costs associated with each management action, and uncertainties associated with the lake's response to lower nutrient inputs. The Division will evaluate the strategy's effectiveness after at least ten years, based on trend analysis and lake use support assessments, and may develop additional watershed modeling. Any future modifications to the strategy would require additional rulemaking.