



**Date:** December 21, 2010

**To:** Thomas J. Bonfield, City Manager  
**Through:** Theodore L. Voorhees, Deputy City Manager  
Ed Venable, Engineering and Stormwater Manager, Public Works  
Paul Wiebke, Assistant Stormwater Manager, Public Works  
**From:** John Cox, Water Quality Manager, Public Works  
Michelle Woolfolk, Civil Engineer, Public Works  
**Subject:** Falls Lake Nutrient Management Rules Adopted by the NC Environmental Management Commission

**Executive Summary**

The Falls Lake Nutrient Management Rules (Falls Lake Rules) have been under development for more than a year by the NC Division of Water Quality. Final rules were adopted by the NC Environmental Management Commission on November 18, 2010. The rules go into effect on January 15, 2010. These rules include requirements for newly developing lands, lands that are currently developed (i.e., existing development), agriculture, and wastewater.

The Public Works Department/Stormwater Services Division and Department of Water Management will provide a combined presentation to update City Council on the content of the Falls Lake Rules and local government responses to the adopted rules.

**Recommendation**

The Stormwater Services Division of the Public Works Department recommends that the City Council receive an update on the Falls Lake Nutrient Management Rules adopted by the North Carolina Environmental Management Commission.

## Attachment 1

### Summary of Falls Lake Nutrient Management Rules (15A NCAC 2B .0275 through 0.282)

#### Rule organization:

- .0275 Purpose and Scope
  - .0276 Definitions
  - .0277 Stormwater – New Development
  - .0278 Stormwater – Existing Development
  - .0279 Wastewater Discharge Requirements
  - .0280 Agriculture
  - .0281 Stormwater – State & Federal Entities
  - .0282 Options for Offsetting Nutrient Loads
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#### **.0275 Purpose and Scope**

- This portion of the rule provides the framework for the entire set of rules and is also referred to as the **“Goals” rule**.
- Section .0275 outlines the goals of the Falls Lake Nutrient Management Strategy, including specifying a 40% reduction to nitrogen loads and a 77% reduction to phosphorus loads entering Falls Lake from 2006 levels.
- These water quality improvements are required to be achieved first in areas furthest downstream. The portion of the lake below Highway 98 (closest to the dam) is expected to achieve compliance by **2016**. Areas upstream, near the City of Durham and the Town of Butner, are expected to be in compliance by **2041**. Areas of the lake between these two sections have compliance deadlines falling between 2016 and 2041.
- The Goals rule provides for two stages of implementation, with the first Stage (Stage I) implemented within 10 years or **by 2021**. Stage II, which applies to the upper Falls lake watershed, should be fully implemented by **2041**.
- A mandatory evaluation of Stage I is required **by 2025**, prior to implementing Stage II. This evaluation must be brought to the Environmental Management Commission by the Division of Water Quality and provides an opportunity to change Stage II. Continued implementation of nonpoint source controls is required between Stage I and Stage II.
- Methods other than those used to develop the overall reduction goals (40% nitrogen reduction/ 77% phosphorus reduction) may be considered to evaluate compliance.

#### **.0277 Stormwater – New Development**

- Runoff after construction (i.e., post-construction) must meet a nitrogen unit area mass loading rates of 2.2 pounds/acre/year and a phosphorus load of 0.33 pounds/acre/year.
- Post-construction requirements apply to residential land disturbances of one-half acre or more, and to commercial land disturbances of 12,000 square feet (0.275 acres) or more.

- At least 30 percent (30%) of treatment goals must be met on-site for residential properties between one-half acre and one acre and on commercial sites between 12,000 square feet (0.275) and one acre. The remainder of the treatment goals can be met off-site.
- At least 30 percent (30%) of treatment goals must be met on-site for redevelopment projects that increase impervious surface. In the case of redevelopment, the treatment goal is either the unit area mass loading rate or the percent reduction in the Goals rule.
- At least 50% of treatment goals must be met on-site for any development disturbing more than one acre.
- **Implications** – Stormwater ordinances will require amendment to lower the phosphorous requirement from 0.5 pounds/acre/year to 0.33 pounds/acre/year and to reduce the post construction applicable thresholds for commercial developments from 0.5 acres to 12,000 square feet (0.275 acres) and residential development from one acre to 0.5 acres.

#### **.0278 Stormwater – Existing Development**

- All local governments must implement load reducing activities on existing lands that are developed (existing development).
- Stage I goals for existing development are to reduce nonpoint source nitrogen and phosphorus loads to Falls Lake to the levels in 2006. This shall be completed by **2021**.
- Stage II goals are to reduce nonpoint source nitrogen and phosphorus loads to less than 2006 levels. Nitrogen shall be reduced by 40% from 2006 levels, and phosphorus shall be reduced by 77% from 2006 levels.
- Between **2021** and **2025** as Stage 1 efforts are being evaluated, efforts to reduce loads from existing development will continue to be implemented at the same rate as during Stage I.
- Reasonable and cost effective.

#### **.0279 Wastewater Discharge**

- The Stage I goal for wastewater dischargers sets a baseline loading of nitrogen and phosphorus into Falls Lake at 2006 levels.
- The North Durham Water Reclamation Facility's Stage I Total Nitrogen allocation is 97,665 pounds/year and Total Phosphorus allocation is 10,631 pounds/year (2006 baseline).
- The North Durham Water Reclamation Facility (WRF) can achieve its Stage I allocations by implementing a number of optimization measures to reduce nitrogen and phosphorus.

- A plan to meet Stage II mass limitations is due in **2027** (no later than sixteen years after effective due date of rule).
- The Stage II implementation date is **2036**. As determined by the model, the mass allocation (pounds/year) for the upstream dischargers is 97,617 pounds of Total Nitrogen and 5,438 pounds of Total Phosphorus. It is proposed that this mass allocation will be divided among the existing dischargers in proportion to the dischargers' permitted flows. Under this allocation methodology, approximate reduction of 40% for Nitrogen and 65% for Phosphorus will be required by the North Durham WRF.
- The North Durham WRF will not be able to meet Stage II allocations with existing conventional technology. Significant investment in state-of-the art water treatment technology will be required.
- **Implications:** Capital costs to meet Stage I may range between \$3M and \$13M; these anticipated costs are programmed into the department's Capital Improvement Program. Costs to meet Stage II, using state-of-the art technology, range between \$80M and \$320 depending on final requirements and technology selected. These costs do not include additional operational costs, which could be significant (\$600 M).

**.0280 Agriculture and .0281 State and Federal Entities**

The Agriculture and State and Federal Entities rules as adopted do not directly affect City operations at this time; therefore, no summary is provided.

**.0282 Options for Offsetting Nutrient Loads (Trading)**

- This portion of the rule provides options for meeting new development goals by obtaining or buying credit for activities conducted by others.
- Minimum requirements for the exchange of nitrogen and phosphorus credits are specified for each land use (i.e, agriculture, new development, wastewater, and state & federal entities).
- Credits are restricted by geographic area. For example, new development in the upper Falls Lake watershed may only be offset by credits achieved in the upper Falls Lake watershed.
- Local governments may combine reduction needs from wastewater and existing development, including loads from on-site wastewater, to meet goals.
- **Implications** – The rules provide no provisions for use of land banks as an option for offsetting nutrient loads. Land banking will likely not be allowed. Existing ordinances which allow the use of land banks would need to be repealed.