

Fact Sheet - Falls Lake/Jordan Lake Stormwater Rule for New Development in Orange County

Introduction

Both Falls Lake and Jordan Lake are considered polluted due to excessive nutrient inputs and stormwater runoff is one of the major sources. As a result, both lakes have been designated as Nutrient Sensitive Waters (NSW) by the North Carolina Division of Water Quality (DWQ). Through a long stakeholder process, nutrient reduction strategies were developed for both lakes as well as all lands/waters draining to them. To address nutrients from stormwater runoff, reductions will be required from both existing developed areas as well as new development.

As part of the nutrient reduction strategy, new development will be required to meet certain stormwater standards, including nutrient limits. The new development nutrient limits are different for each lake, but the stormwater requirements are similar. Orange County is addressing the two programs with one set of regulations within its Unified Development Ordinance (UDO), and will enforce nutrient limits for each lake's watershed.

Key Points:

- The Falls Lake and Jordan Lake rules passed by the State require local governments to adopt new stormwater standards for new development.
- The state's Falls Lake rules became effective January 15, 2011 and the Jordan Lake rules became effective August 11, 2009.
- Requirements for the Falls Lake and Jordan Lake watersheds differ slightly; Orange County will amend its UDO to meet the standards for each watershed (see attached [map](#) and [table](#)).
- Stormwater runoff from new development must meet both nitrogen and phosphorus limits.
- Nitrogen and phosphorus limits are different depending on which watershed the development is located.
- Limits apply to new development that meet or exceed land disturbance thresholds; these thresholds differ between the two watersheds (see attached [table](#)).
- Orange County was required to submit its proposed Falls Lake and Jordan Lake new development program to DWQ and the NC Environmental Management Commission (EMC) for review and approval, prior to adoption.

For additional information, click on the links below:

- [Stormwater and Excess Nutrients – Why Care About Stormwater?](#)
- [Map showing Falls Lake and Jordan Lake watersheds in Orange County](#)
- [Table comparing current Neuse rules with new Falls Lake and Jordan Lake limits](#)
- [Adoption Timeline](#)
- Also visit DWQ's websites:
<http://portal.ncdenr.org/web/wq/ps/nps/fallslake>
<http://portal.ncdenr.org/web/jordanlake>

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New Development in Orange County**

Adoption Timeline:

<i>Action</i>	<i>Date</i>
1. Submitted proposed new development program to the North Carolina Division of Water Quality (DWQ) and Environmental Management Division (EMC)	August 10, 2011
2. Proposed changes to Orange County's Unified Development Ordinance (UDO) reviewed by the Orange County Planning Board, Ordinance Review Committee	December 7, 2011
3. EMC Approval of Orange County's new development program	January 12, 2012
4. Quarterly Public Hearing, Orange County Board of County Commissioners (BOCC)	February 27, 2012
5. Orange County Planning Board review comments from Public Hearing and make recommendation to BOCC	March 7, 2012
6. BOCC expected to adopt UDO changes to meet new development requirements	April 3, 2012
7. Begin implementation of new development rules (assuming adoption by BOCC in April); state rules require implementation by July 1, 2012.	May 1, 2012

Stormwater and Excess Nutrients - FAQs

Why care about stormwater?

As we add more impervious surface to the landscape, such as rooftops, roads, driveways, and parking lots (including gravel), we create more stormwater runoff. More stormwater runoff means less rain “soaks” (infiltrates) into the ground. Less infiltration means less groundwater for our wells and streams, worsening the effects of drought.

What’s worse...as stormwater flows across impervious surfaces or exposed soil, it picks up various pollutants, such as oil & grease, excess nutrients, harmful bacteria, trash and sediment. Polluted stormwater flows down our storm drains and through our ditches where it is discharged, untreated, into our streams, rivers, and lakes. Stormwater runoff pollution can adversely impact aquatic ecosystems and our drinking water supplies. Ultimately this costs money, such as a new well, higher water rates, or expensive environmental restoration required by clean water regulations.

Don’t nutrients occur naturally?

Nutrients, nitrogen and phosphorus, occur naturally and are vital to plants and therefore the ecosystem. However, as described above, when we increase impervious surface, fewer nutrients can infiltrate and therefore less are taken up by natural systems. Like water, nitrogen has a “cycle” and when various forms of nitrogen cannot infiltrate into the ground due to impervious surfaces, the excess ends up in waterbodies causing an imbalance. Phosphorus can actually bind to soil particles and since increased impervious surface often leads to increased downstream erosion, excess phosphorus also reaches our local waterways.

What impacts do excess nutrients have on our water?¹

Excess nutrients, especially in lakes, reservoirs and estuaries, enhance plant growth and cause excessive algae growth. Some plants, like hydrilla, are invasive and can become a nuisance, but what is even more serious is the change in chemical composition of the water. As plants and algae die, they use up available oxygen in the water, causing fish kills and other ecological impacts. This process, known as eutrophication, is a major water quality problem across the country.

However, eutrophication has other serious impacts. Some of the algal blooms can be toxic and generate a range of paralytic, diarrhetic and neurotoxic effects which not only negatively impact animals, but can also directly affect humans. For instance high nitrate levels in drinking water have been linked to various health problems in humans including reduced red blood cell production. High nutrient levels require additional treatment which may cause elevated levels of chemicals used to disinfect drinking water during treatment.

Excess nutrients can alter taste and odor in drinking water, which require increased treatment costs. Cyanobacteria, (also known as blue-green algae) can be toxic and may pass through normal water treatment processes. According to some research, ingesting water contaminated with chemicals produced by harmful algal blooms can cause gastrointestinal complications, acute or chronic liver damage, neurological symptoms and even death. Additionally, excess nutrients can alter habitat needed by fish and shellfish, or simply poison these animals. This can lead to harvesting closures and consumption bans. The economic impact is staggering, and stormwater is just one source of excess nutrients in our local waters. Across the nation, the cost of reducing nitrogen and phosphorus pollution is in the billions of dollars annually.

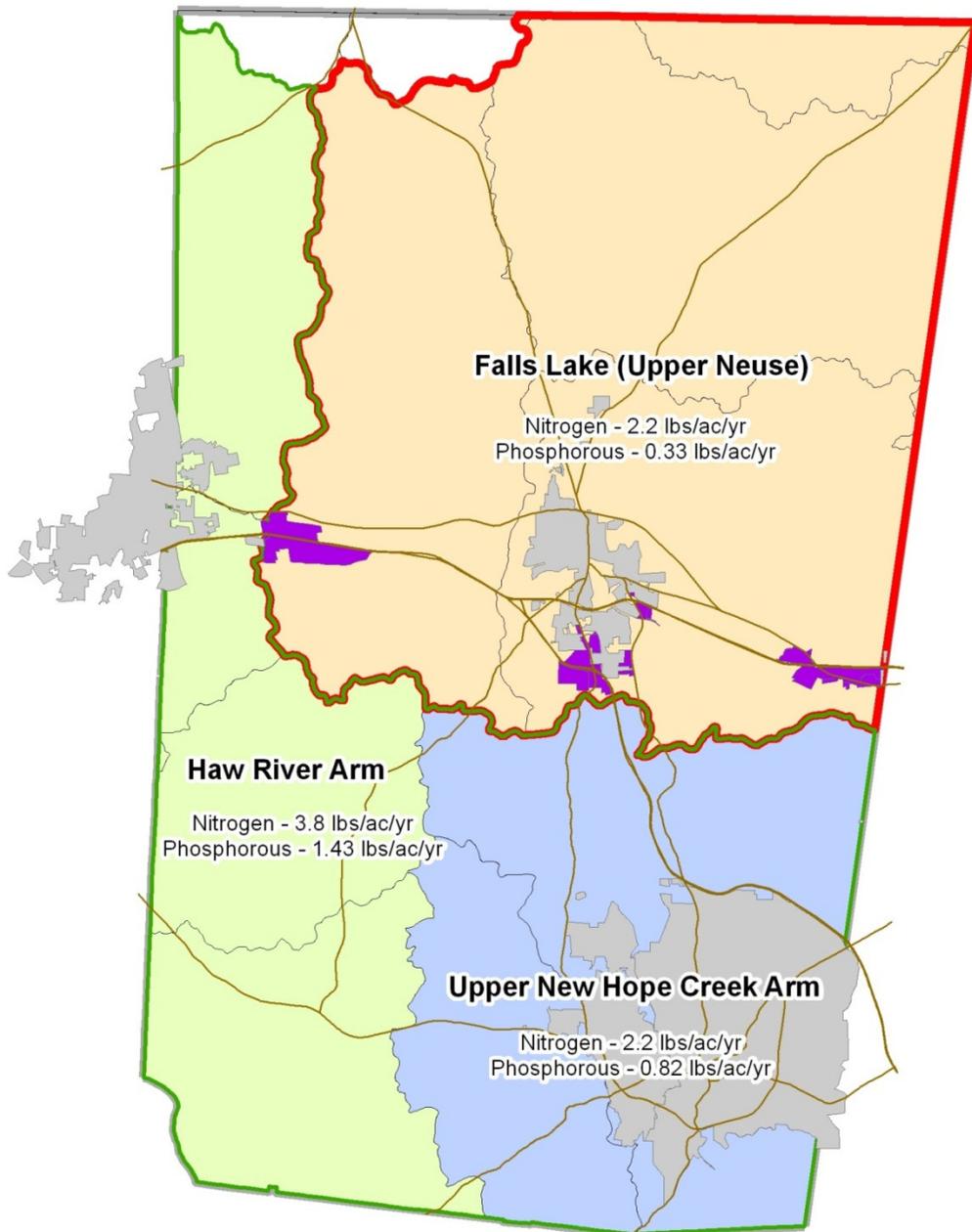
What can be done?

Clearly excess nutrients are a problem and stormwater runoff is one known source. For new development, nutrient loading limits can be set. To meet these limits, development can use both structural and non-structural controls. Non-structural controls include proper site design, stream buffers, soil amendments and other means to encourage onsite infiltration of stormwater. Structural controls include bioretention cells (i.e. “rain gardens”), stormwater wetlands, detention ponds and other structural measures engineered to reduce stormwater runoff pollution.

¹ Please visit, <http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/effects.cfm> for references, citations and additional information.

Jordan Lake and Falls Lake Rules

State Required Nutrient Loading Rates for New Development



-  Falls Lake Watershed
-  Jordan Lake Watershed
-  Economic Development Districts



Falls Lake Watershed in Orange County includes the following sub-watersheds: Flat River, Little River, Lower Eno Protected, Lower Eno Unprotected, Upper Eno, and upper Eno Critical Area.

The Upper New Hope Creek Arm of the Jordan Lake Watershed in Orange County contains the following sub-watersheds: Jordan Lake Unprotected, Jordan Lake Protected and University Lake

The Haw River Arm of the Jordan Lake Watershed in Orange County contains the following sub-watersheds: Back Creek, Cane Creek, Cane Creek Critical Area, Haw Creek, Haw River Protected, and Haw River Unprotected.

Comparison of New Development Standards Current Neuse Rules vs. Falls Lake/Jordan Lake Rules

Current Neuse Rule Loading Rates for New Development

Watershed	Land Disturbance Applicability Thresholds	Sub-watershed	Loading Rate (pounds/acre/year)	
			Nitrogen	Phosphorous
Neuse	Commercial/Industrial ½ acre Residential 1 acre	N/A	3.6	N/A

Proposed Nutrient Loading Rates for New Development*

Watershed	Land Disturbance Applicability Thresholds	Sub-watershed	Loading Rate (pounds/acre/year)	
			Nitrogen	Phosphorous
Jordan Lake	Commercial/Industrial ½ acre	<i>Upper New Hope</i>	2.2	0.82
	Residential 1 acre	<i>Haw River</i>	3.8	1.43
Falls Lake	Commercial/Industrial 12,000 sq ft Residential ½ Acre	<i>Entire watershed</i>	2.2	0.33

*As required by the Jordan Lake and Falls Lake Nutrient Management Strategy regulations adopted by NCDWQ