



Memorandum

To: William D. Lorenz, Jr., P.E., Director Land Development Services
From: Mac Hatcher, Senior Environmental Specialist
Date: June 29, 2011
Subject: Collier County Florida-Friendly Use of Fertilizer on Urban Landscapes

During the June 14, 2011 Board of County Commissioners hearing the commissioners requested the following provisions be incorporated in the state draft model ordinance and support for these provisions be documented. Additionally the commissioners requested that a through water quality analysis be performed after a year.

Alternate Provisions

- Fifty percent slow release nitrogen.
- Less than 2 percent phosphate
- Annual limit of 4 pounds of nitrogen per 1000 square feet
- Fertilizer application Prohibited Period of August and September
- Fertilizer Free buffer of 10 feet
- Fruit and vegetable exception.

The more stringent provisions will be discussed individually below. Staff requested input from Florida Department of Environmental Protection (FDEP), Department of Agriculture and Consumer Services (DACCS), and the University of Florida Institute for Food and Agricultural Sciences (IFAS) on most of these provisions in March 2011(except the 2% phosphorus limit and the prohibited period was June – September). The state agency responses are attached. There are not directed scientific studies to address these specific restrictions, however there are conceptual studies and agency recommendations that support most the restrictions. Additionally we received support documents from Judith Hushon and the Conservancy of Southwest Florida and have attached both of these support documents.

With the exception of the shortened prohibited period and phosphorus restriction these provisions are consistent with the adjacent jurisdiction's fertilizer ordinances (City of Naples, Lee County, and Bonita Springs). The FDEP model ordinance guidance points out there are disadvantages of confusing jurisdictional differences. The Florida Friendly Best management Practices for the Protection of Water Resources by the Green Industries (GI BMP)(FDEP 2008) is the basis for training for the model ordinance commercial applicator training and certification program. Recommendations from this document and other agency recommendations are accepted as support for these more stringent provisions.

50 % Slow Release Nitrogen

There have not been studies to determine the optimal percentage of slow release nitrogen in urban landscape fertilizers. Support for the recommendation of requiring fifty percent slow release nitrogen is in the Florida Friendly Best management Practices for the Protection of Water Resources by the Green Industries (GI BMP) in the nitrogen management section. The GI BMP recommendation for individual nitrogen application rates for water-soluble nitrogen is 0.5 pounds per 1000 square feet and the total nitrogen limit is 1.0 pound of nitrogen per 1000 square feet. Thus a 1 pound application (the maximum legal application) of nitrogen would need to be at least 50 % slow release nitrogen.

The percentage of slow release nitrogen is not required to appear on the label so the applicator must be able to know how to figure this percentage. This simple calculation will be included in the proposed public education program. The 50 % slow release nitrogen standard has been adopted by all adjacent jurisdictions and recommended by the Environmental Advisory Council (EAC) and Collier County Planning Commission (CCPC).

4 Pound Per 1000 Square Feet Annual Nitrogen Limit

There have not been studies to determine that 4 lbs of nitrogen per 1000 sq ft is the best application rate. The Florida Yards and Neighborhoods Handbook (IFAS and FDEP 2009) recommends fertilizing only when needed and suggests that in south Florida the application rate of nitrogen for bahiagrass and centipedegrass would be 2 lbs, and for St. Augustine or zoysiagrass it would be 3 - 4 lbs. The annual limit of 4 pounds of nitrogen per 1000 square feet is a moderate amount compared with the FAC 5E-1.003(2)4 Fertilizer Label Requirements (table below). For south Florida a 4 lb application rate is in the range for most turf grasses and is at the low end for St Augustine grass however it is less than the minimum recommendation for Bermudagrass. The 4 pounds of nitrogen per 1000 square feet annual limit has been adopted by all adjacent jurisdictions and was recommended by the EAC and the CCPC and the South West Florida Regional Planning Council (SWFRPC).

Taken From FAC 5E-1.003(2)4
Fertilization Guidelines for Established Turfgrass Lawns in Three Regions of Florida
Nitrogen recommendations
(lbs N / 1000 ft² / year)*

Species	North	Central	South
Bahiagrass	2-3	2-4	2-4
Bermudagrass	3-5	4-6	5-7
Centipedegrass	1-2	2-3	2-3
St. Augustinegrass	2-4	2-5	4-6
Zoysiagrass	3-5	3-6	4-6

North Florida is north of Ocala. Central Florida is defined as south of Ocala to a line extending from Vero Beach to Tampa. South Florida includes the remaining southern portion of the state.

Less Than Two Percent Phosphorus

There are no directed studies to define an optimal phosphorus fertilizer content staff is aware off. The GI BMP recognizes phosphorus is implicated to cause algal blooms and recommends soil

testing for phosphorus prior to applying and where applications are based on soil tests the recommendation is to test annually. The model ordinance utilizes the FAC 5E-1.003 Fertilizer Label Requirements which require a per application limit of 0.25 lbs per 1000 square feet. In the survey of available fertilizers from large retailers for the CCPC two of the 13 products labeled for turf application had a phosphorus content that would exceed the annual application limit for phosphorus if the annual nitrogen application was four pounds per 1000 square feet. (One of these products was greater than two percent phosphorus and the other was 2 percent phosphorus.) To ensure the protective annual limit of 0.5 pounds of phosphorus per 1000 square feet the per application and annual application rates were added to the ordinance in addition to the 2 percent phosphorus limit. Fertilizers labeled for landscape plants are more likely to contain more than 2 % phosphorus. The City of Naples has a 2 % Phosphorus limit, Lee County and Bonita Springs use the model ordinance application restrictions. The CCPC recommended no phosphorus fertilizer without a soil test indicating a deficiency.

Prohibited Nitrogen and Phosphorus Fertilizer Application period

There are no studies to define when rainfall will initiate leaching or runoff. Other jurisdictions have built a case for a June to September ban based on wet season rainfall patterns. In addition to the increase in rainfall frequency ground water conditions should be considered. The Soil Survey of Collier County shows that the runoff potential is high (Figure 1) when soils are thoroughly wet. The seasonal high water table data shows that ground water is within 6 inches of the ground surface in most areas (Figure 2) during the wet season. Rainfall in July, August and September exceed the estimated wet season monthly average evapotranspiration rate of approximately 4.1 inches indicating the ground water elevations would be rising. Considering the frequency of rainfall and average monthly evapotranspiration rate saturated soil conditions are likely in August and September. It is a practical enforcement solution to prohibit nitrogen and or phosphorus fertilizer applications at this time of year. The City of Naples, Lee County, Bonita Springs, and EAC recommended a prohibition period of June through September. The CCPC recommended a prohibition period of August and September.

Precipitation - Ft. Myers, Fl. 1944- 1983

	Avg. Total	Days 0.1 in or more
January	1.7	5
February	2.17	6
March	2.56	5
April	1.97	5
May	4.04	8
June	4.23	15
July	8.72	18
August	8.3	18
September	8.55	16
October	3.96	8
November	1.34	4
December	1.43	5
Yearly Avg.	53.97	

From the Collier County Soil Survey

Ten Foot Fertilizer Free Buffer for Water Bodies and Wetlands

There are no scientific studies to define the recommended width needed to protect a water body from nutrient runoff. There are studies that show that a vegetated buffer will reduce the nutrients in the runoff and reduce the amount of runoff. The Florida Yards and Neighborhoods publication from FDEP and IFAS recommend a 10 foot low maintenance buffer zone to help reduce pesticide and fertilizer runoff. The City of Naples, Bonita Springs and Lee County have a 10 foot fertilizer free requirement and the EAC and CCPC recommended the same buffer distance.

Fruit and Vegetable exception

Section 8 (c) allows an applicator to follow IFAS guidelines to fertilize fruit and vegetables. No change was thought necessary to address this issue.

Water Quality Analysis

The Pollution Control and Prevention Departments surface water monitoring network annual assessment will be utilized to evaluate the effectiveness of the fertilizer ordinance. Water quality stations in the urban area will be compared to rural stations where impacts from the fertilizer ordinance will be minimal. Nitrogen, phosphorus, and chlorophyll will be analyzed for significant change approximately a year after adoption of the ordinance. This will be accomplished as part of the annual water quality assessment.

**Figure 1 Areas with High Runoff Potential
Collier County Soils Hydrologic Group D**

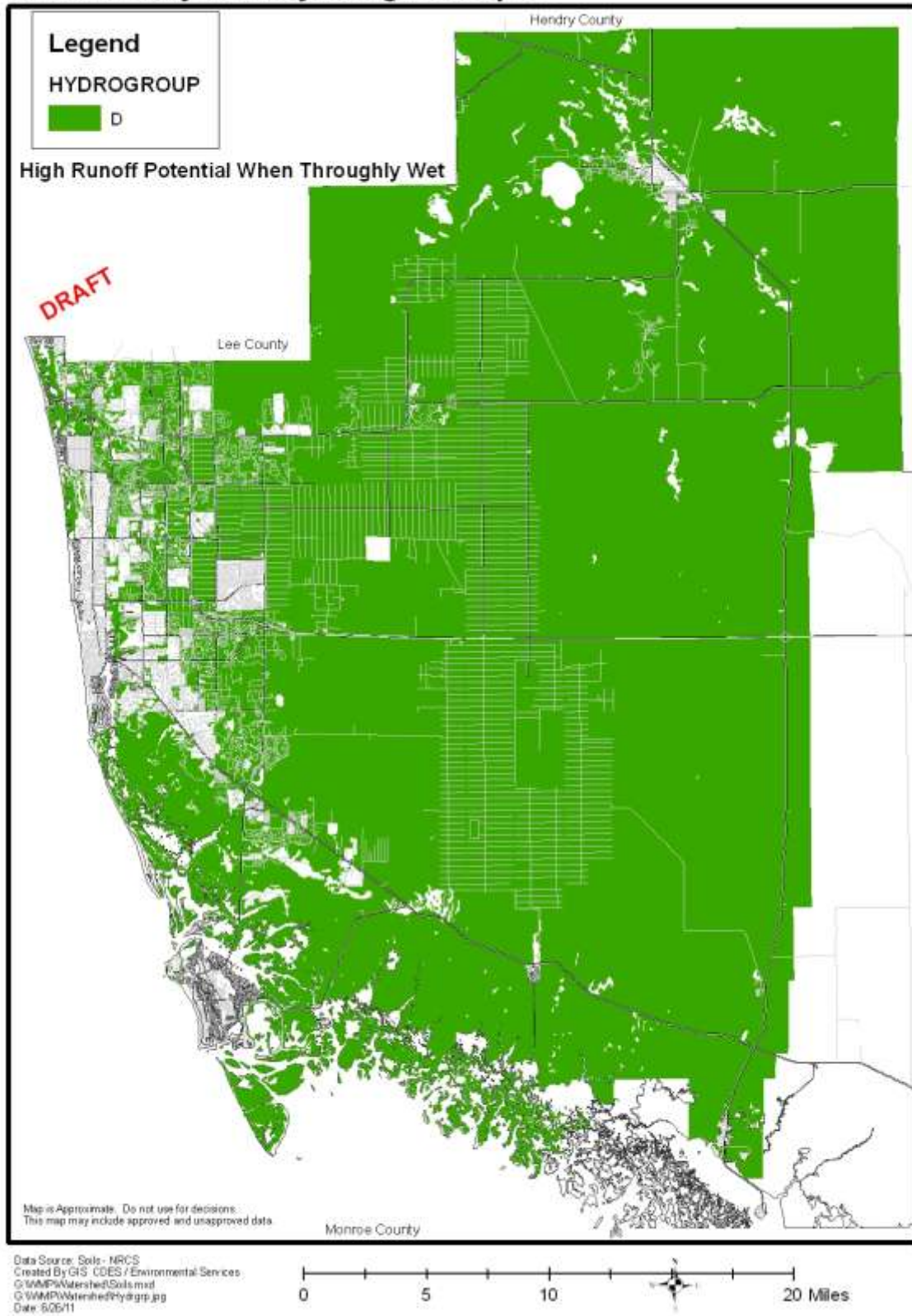


Figure 2 Areas with a seasonal high water table within 0.5 feet of ground surface

Collier County Soils Seasonal High Water Table

