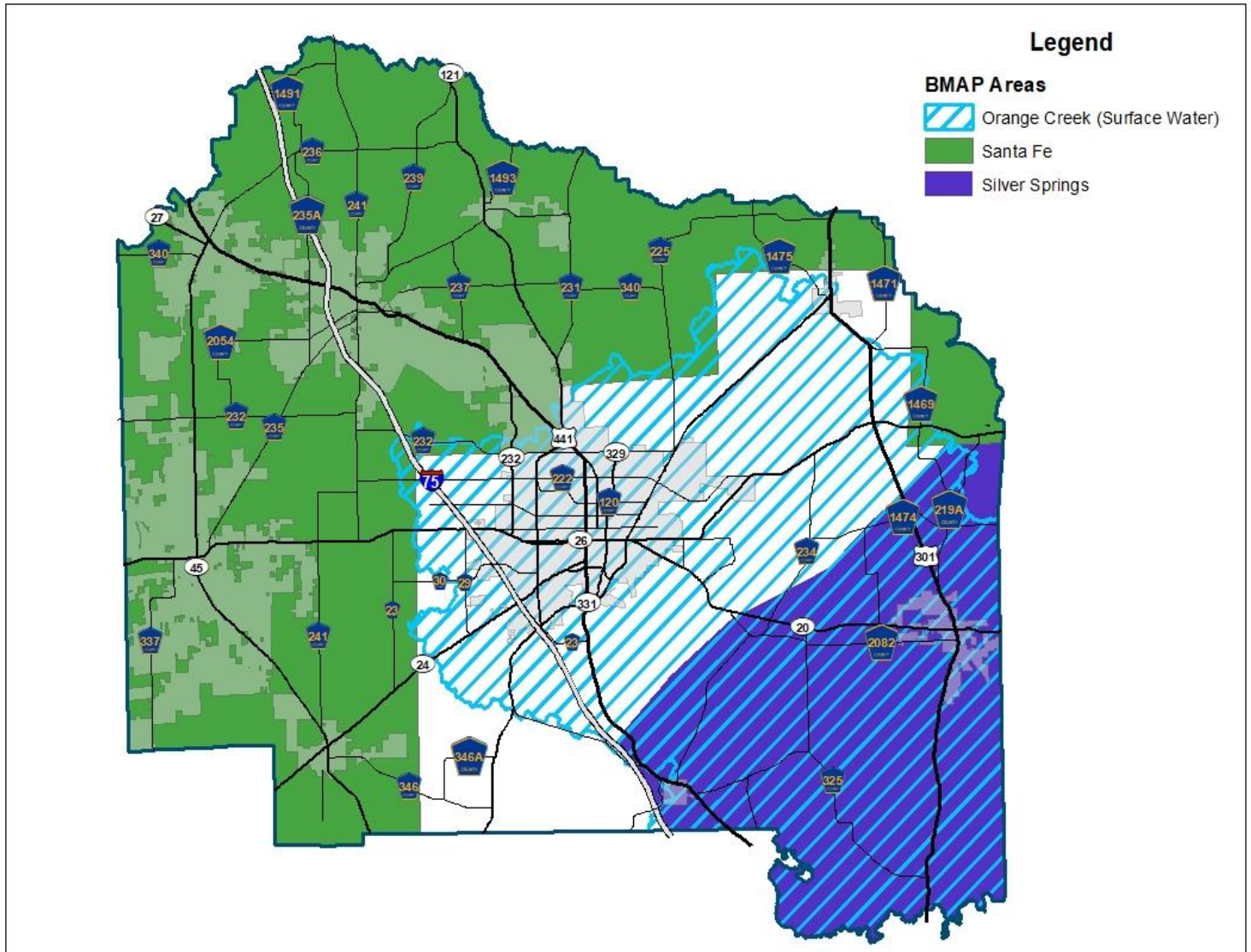
Water Quality Code Revisions

Public Hearing
April 9, 2019

Environmental Protection Department

Impaired Waters-
Basin Management Action Plans (BMAPs)

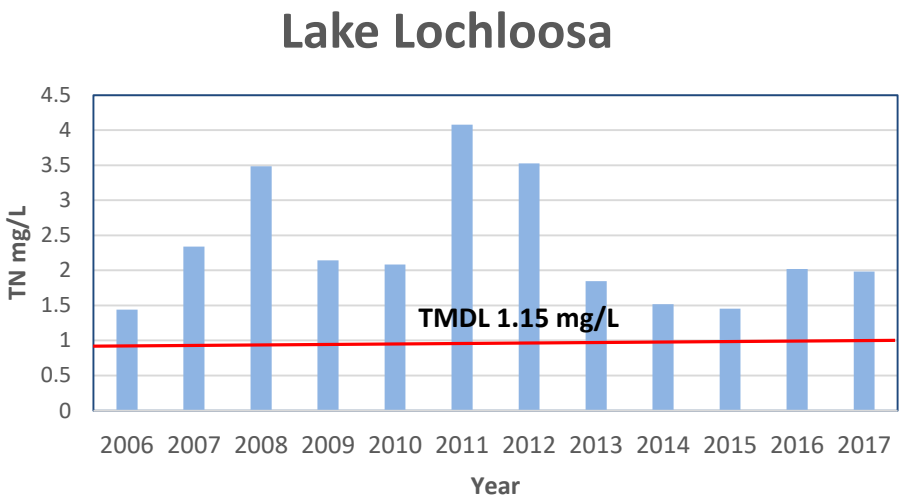


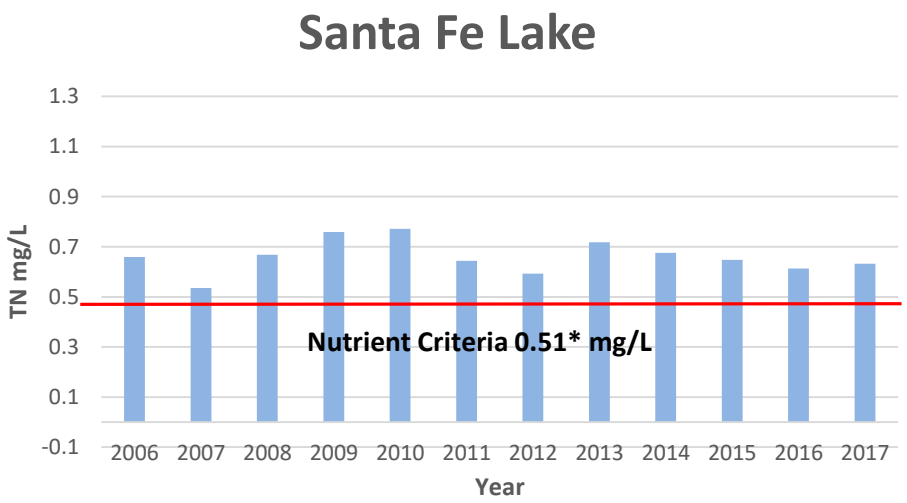
Summary of Proposed Revisions

- Revised Stormwater Quality exemption language
- Irrigation Days of the Week revisions
- Irrigation Design Code Revisions with Countywide applicability
- New Florida Friendly Landscaping Homeowners Association provisions
- Strengthening Fertilizer Requirements including extended Blackout Period

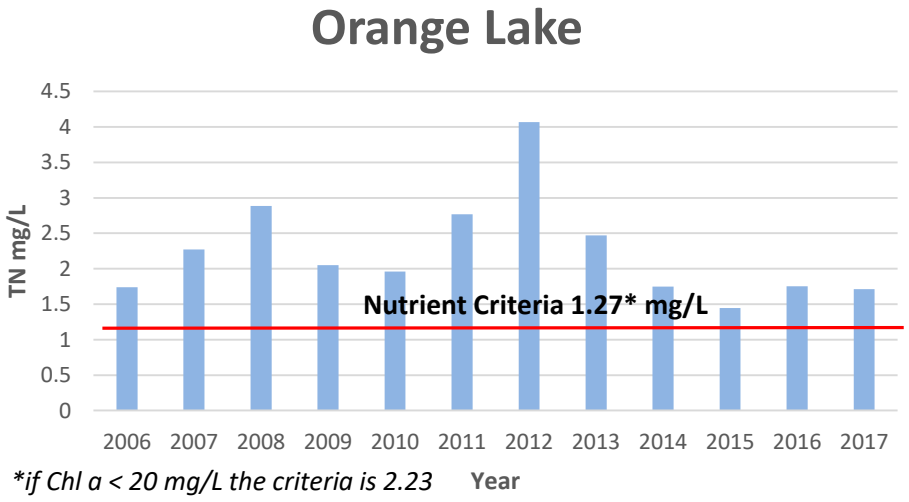
Water Quality Does Not Meet State Standards

(Annual Geometric means for Total Nitrogen)

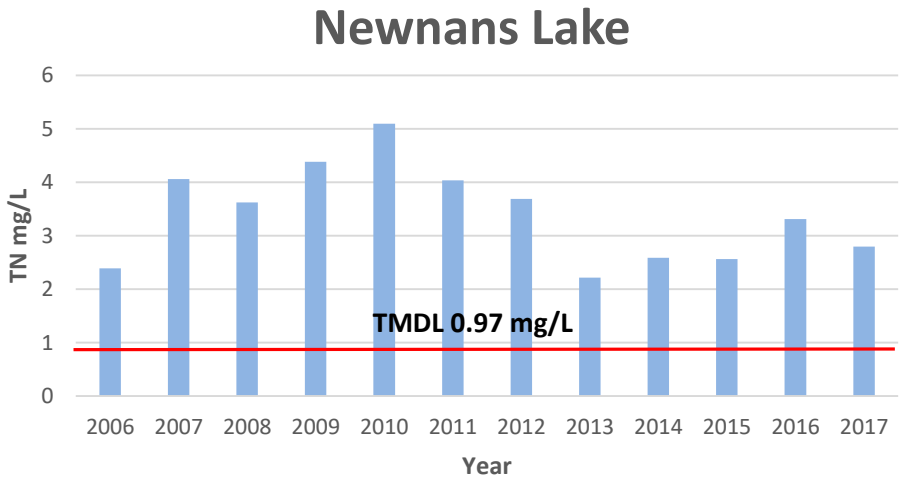




**if Chl a < 6 mg/L the criteria is 0.93 mg/L*

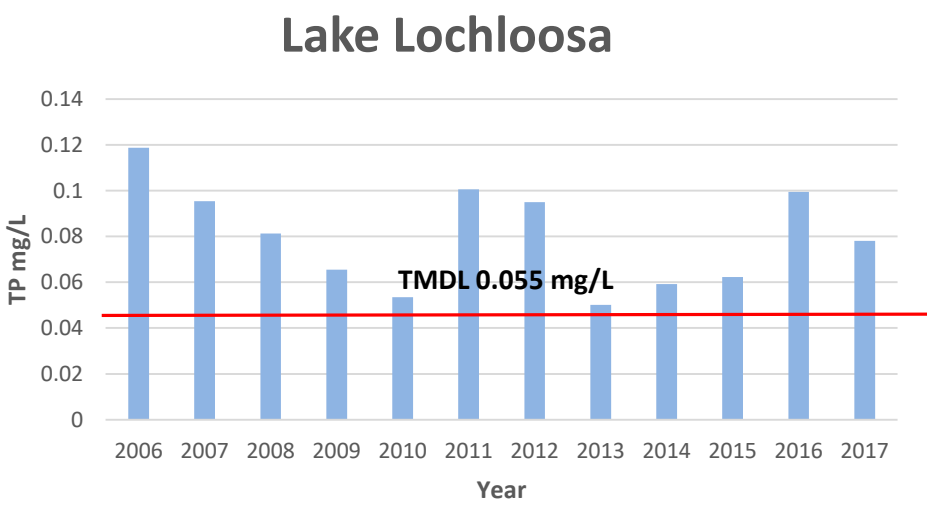


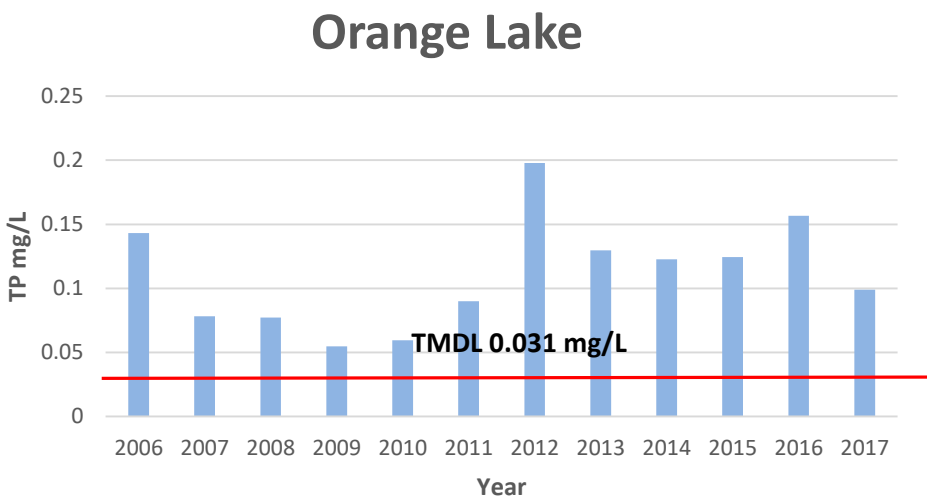
**if Chl a < 20 mg/L the criteria is 2.23*

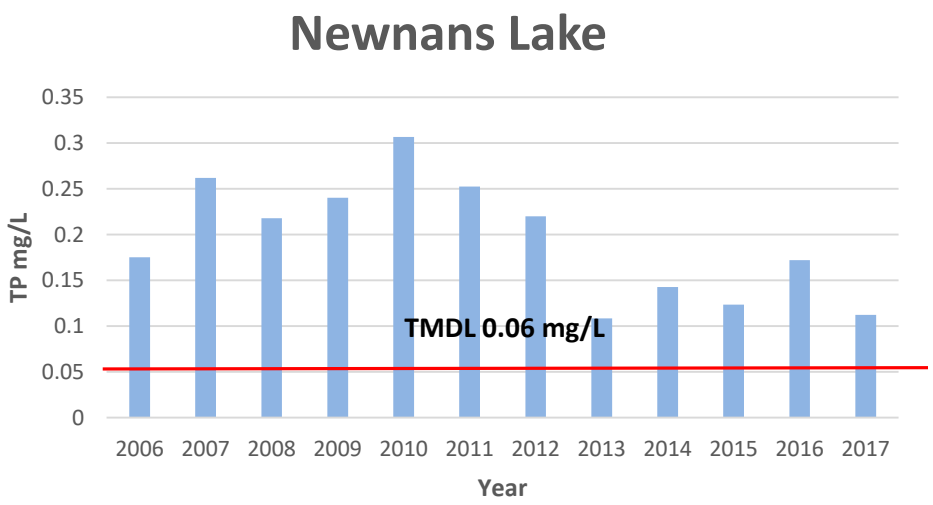


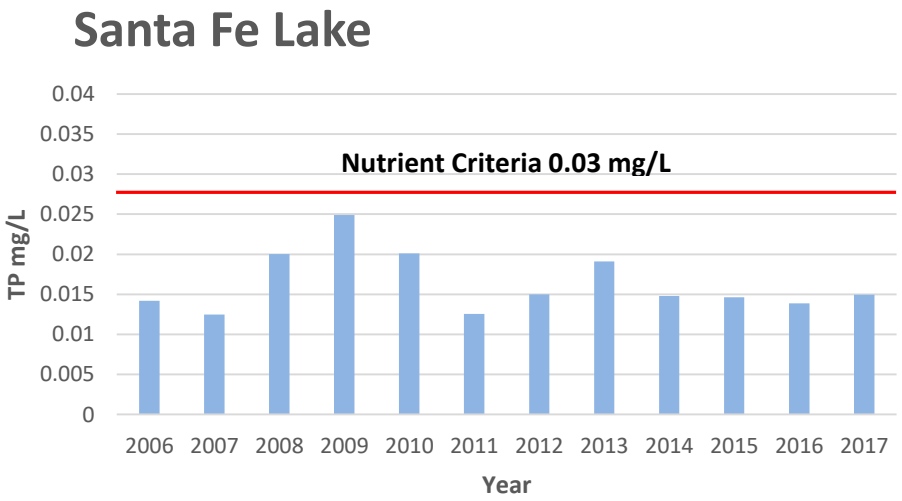
Water Quality Does Not Meet State Standards

(Annual Geometric means for Total phosphorus)



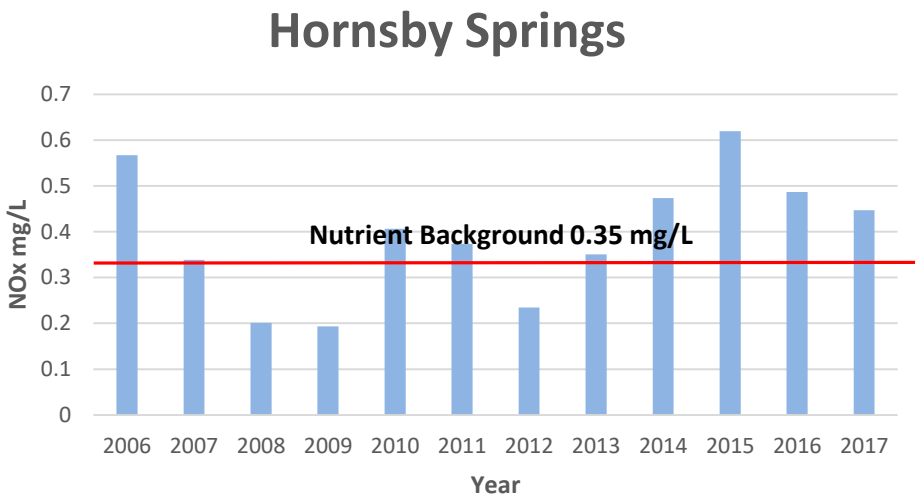


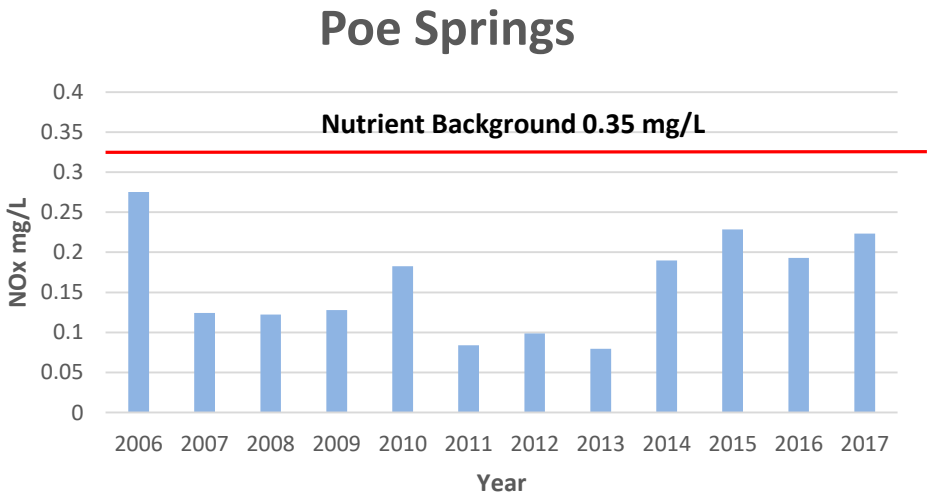




Water Quality Does Not Meet State Standards

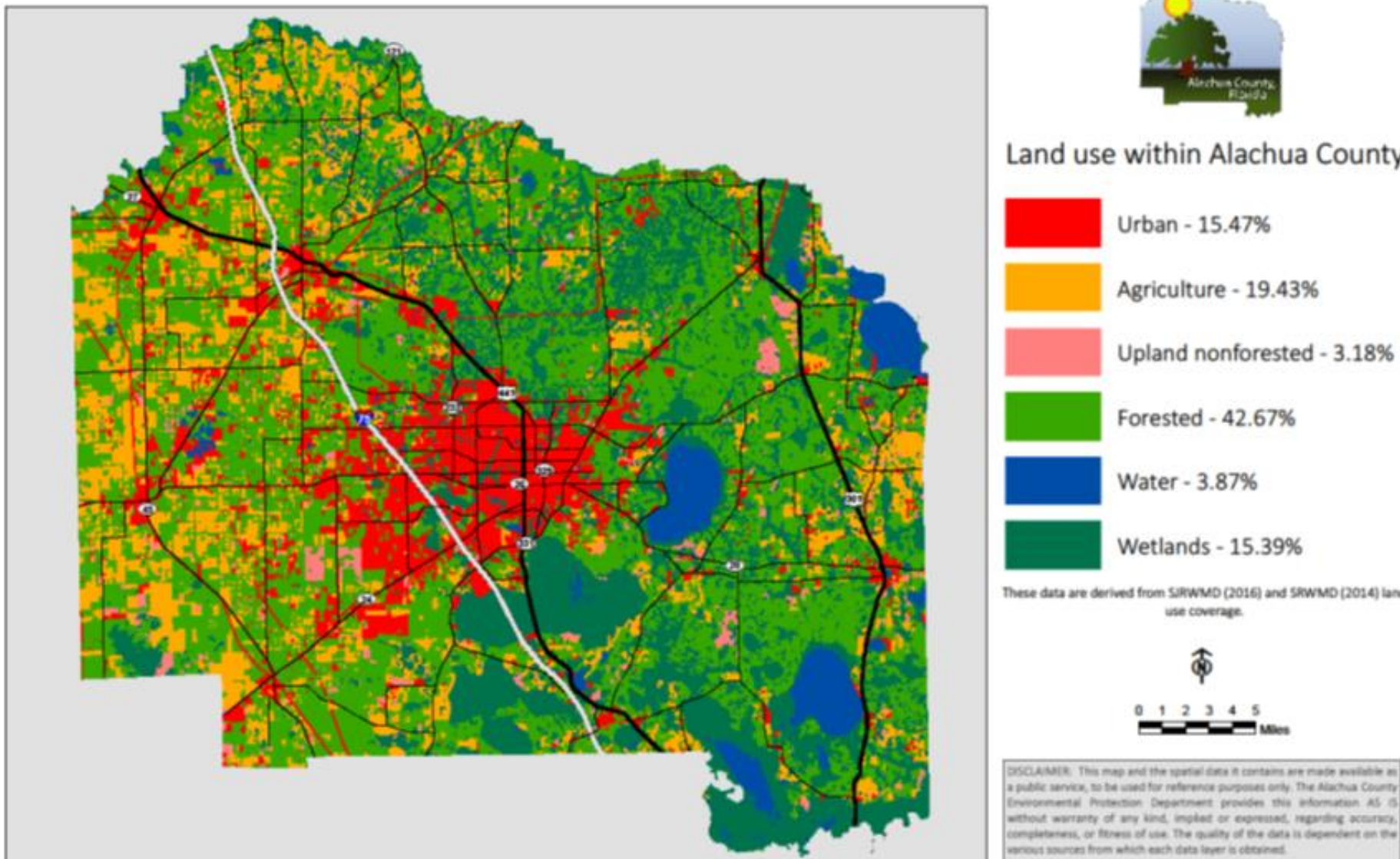
(Annual Geometric Means for Nitrate + Nitrite)





Land Use

- FDEP assumes 20% leaching of nitrogen from lawn fertilizers
- IFAS publication "Fate of Nitrogen Applied to Florida Turfgrass" reports leaching of nitrogen ranges from 0-55%



Path Forward to Reduce Nutrient Pollution

- Lobby for state policies that will reduce the impacts from agriculture in the region
- Consider County septic system ordinance
- Stormwater improvement projects
- Promote resilient landscapes that do not depend on irrigation and chemical inputs
  - Fertilizer, Irrigation, and Florida Friendly Landscaping ordinances

Revised Definition of Stormwater Management System

- Revises language in the definition that implies a regulated stormwater system has to be constructed first

- Revised definition to read:

  Stormwater management system means a system which is designed and engineered ~~and constructed or implemented~~ to control discharges which are necessitated by rainfall events, incorporating methods to collect, convey, store, absorb, inhibit, treat, use, or reuse water to prevent or reduce flooding, over drainage, environmental degradation, and water pollution or otherwise affect the quantity and quality of discharges from the system.

New Definitions

- *Project Area* means the limits of a project parcel(s) or phase that is within the Sensitive Karst Area excluding offsite areas, areas dedicated to LID techniques and stormwater management facilities. Open space and common areas may be excluded from the project area if they are maintained in a natural condition or in a condition that requires no fertilization.

New Definitions

- *Best management practices (BMPs)*, for the purposes of Article III Stormwater Treatment Code, means the non-structural and structural practices described in the most recent edition of the Alachua County Stormwater Treatment Manual. Generally, best management practices means structural and non-structural control techniques used for a given set of site conditions that based on research, field-testing, and expert review, have been determined to be effective and practicable for improving water quality, preventing erosion and sedimentation, conserving water supplies and protecting natural resources. Best management practices include, but are not limited to, site planning, turf and landscape practices, structural stormwater management facilities, maintenance procedures, prohibitions of practices, spill and leak control, and other good housekeeping measures for pollution prevention. Best management practices may be implemented individually or as a combination of practices such as a stormwater treatment train.

Revision to Exemption Based on Date of Development Application

- This revision was intended to clarify at what point a project must be in the development review process in order to be exempt from the code.
  - The intent was that this would be at what Alachua County calls “Final Development Plan Approval” or its equivalent stage in the Cities.
  - Does not address projects with preliminary plan approval (or equivalent).
  - May “reset” the effective date of the code.

- Revision to Sec 77.25 (h) to read:

(h) Stormwater management systems that are included in a development application, which if approved would grant the applicant vested development rights over the property, submitted by ~~October 23, 2018~~ April 9, 2019 ~~or have already received State or local approval by January 1, 2019~~.

Alternative: New Exemption

- Existing text of 77.25(h) is clarified to refer to Final Development Plans.
- New Exemption related to projects with an approved preliminary development before April 9, 2019.
- The process question of when required documents should be provided to EPD addressed by modifying language in 77.28 Required Documents.

Revised Exemption Language for Sec. 77.25 (h)

- (h) Stormwater management systems that are included in ~~a development~~ an application for a Final Development Plan, or equivalent in the municipalities, submitted by October 23, 2018 or which have already received State or local approval by January 1, 2019.

Proposed Exemption Language for Sec. 77.25(i)

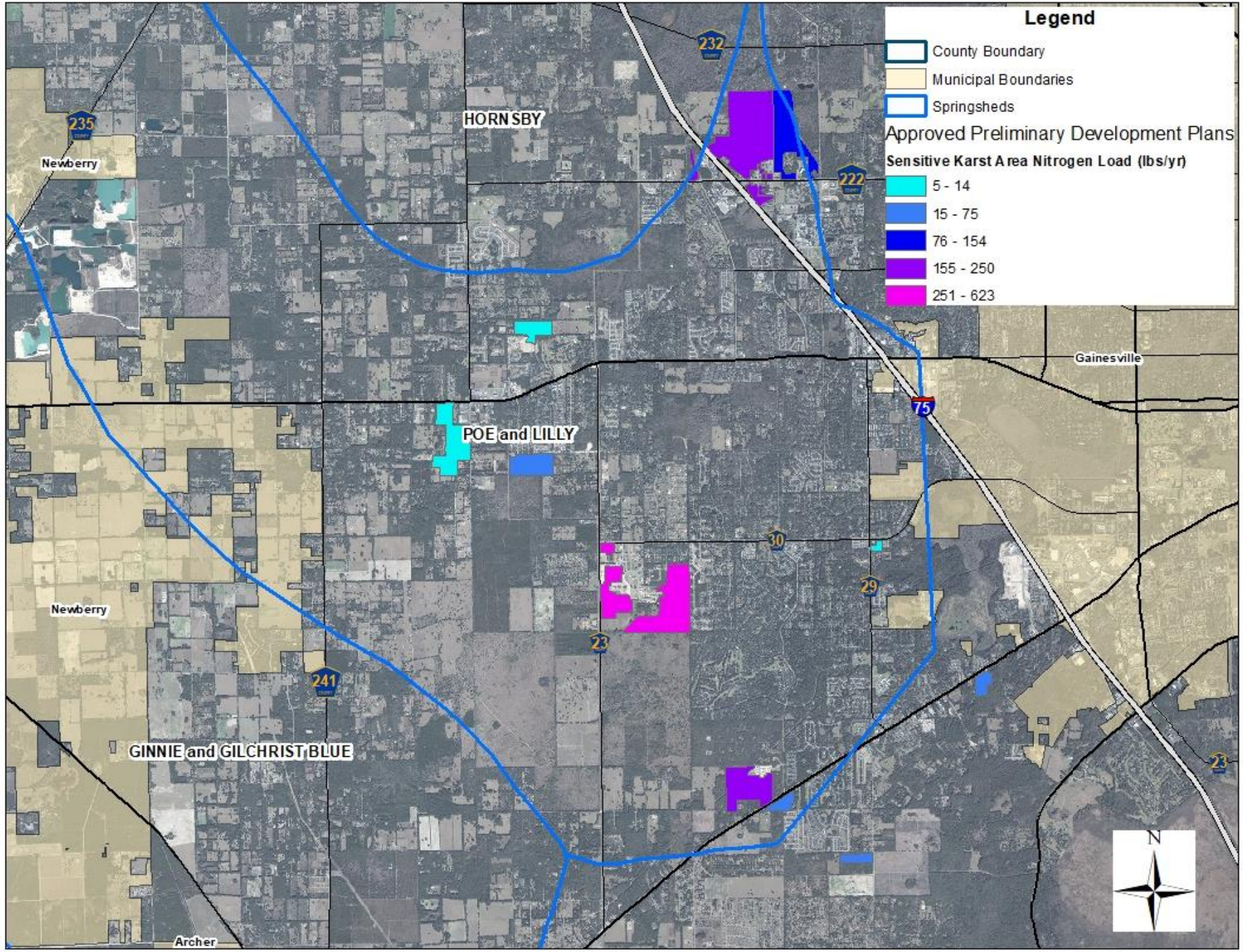
(i) Projects with a Preliminary Development Plan, or equivalent in the municipalities, approved by April 9, 2019 with the following criteria:

1 Projects that have received Final Development Plan, or equivalent in the municipalities, approval for 50% or more of their approved Preliminary Development Plan, or equivalent in the municipalities, area by August 15, 2019.

2 Projects that have not received Final Development Plan, or equivalent in the municipalities, approval for 50% or more of their approved Preliminary Development Plan, or equivalent in the municipalities, area by August 15, 2019 shall meet all requirements of this article, as applicable, except for the karst criteria in 77.27 (d). If the karst criteria would be applicable, these projects shall treat the first half (0.5) inches of runoff from the project area with one or more low impact design techniques separate from the dry retention basin(s).

Revision to Sec. 77.28 Required Documents

- Within 30 calendar days of submitting an application for a Final Development Plan, or its equivalent in the incorporated municipalities, ~~development approval~~ that includes a stormwater management system or stormwater facility, the applicant shall submit to the County:


Legend
County Boundary
Municipal Boundaries
Springsheds
Approved Preliminary Development Plans
Sensitive Karst Area Nitrogen Load (lbs/yr)
5 - 14
15 - 75
76 - 154
155 - 250
251 - 623
HORNSBY
POE and LILLY
GINNIE and GILCHRIST BLUE
Newberry
Newberry
Gainesville
Archer
232
235
222
75
30
29
23
241
23
N

Estimated Load Contribution

Project	Area (ac)	Area in SKA (ac)	Nitrogen Load from SKA (lbs)	Gallons per Year of Runoff (2.07 mg/L TN)
Multerra TND	25.5	20.40	47	2,539,288
GWR TND	129.4	3.88	9	483,212
Lugano TND	111.7	106.12	246	13,208,656
Tioga South PD	38.37	30.70	71	3,820,882
Oakmont PD	283.1	268.95	623	33,476,908
Springhills TOD	351.5	98.42	228	12,250,822
Santa Fe TOD	158	57.67	134	7,178,469
Bellamay Mixed Use PD - Parcel 3	8.5	2.30	5	285,670
Indian Cultural Center	22.7	22.25	52	2,769,069
Dogwood Park TND	25	13.50	31	1,680,411
Arbor Greens PD	29.2	6.13	14	763,280
Total	**1183.0**	**630.3**	**1460**	**78,456,668**

Cost Per Pound of Nutrient Reduction in Karst Area

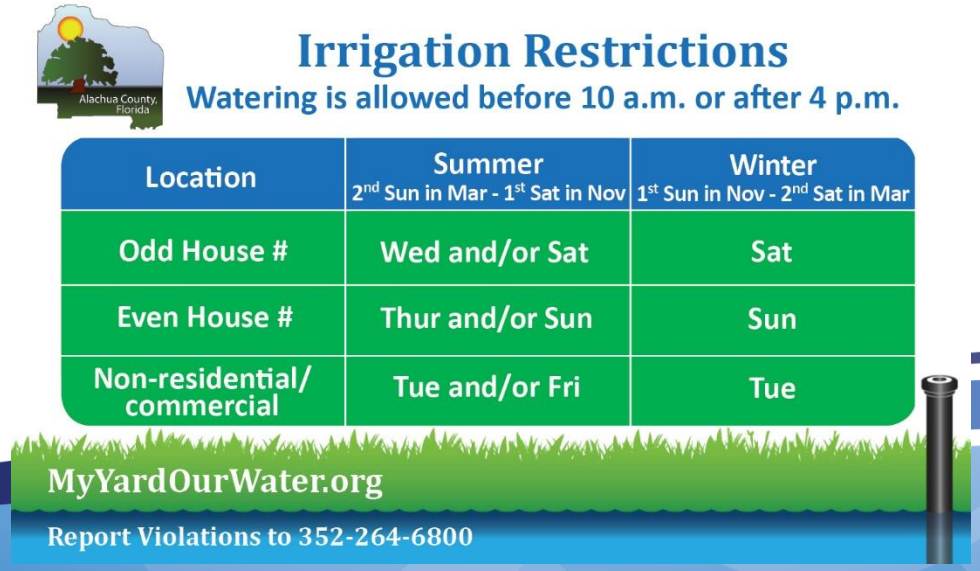
- No Cost Added - Pollution Prevention (fertilizer free landscapes)
- $ Low Impact Design integrated throughout the site.
  - Bioretention/rain gardens; vegetated buffers; pervious pavement; tree well filters; infiltration below the root zone
- $$ Engineered Soils placed in retention basin during construction.
- $$$ Retrofit of constructed stormwater facilities with engineered soils.
  - Potentially HOA funded
- $$$$ Tax/rate payer funded construction of new off-site stormwater facilities or springshed restoration.
  - From Florida Stormwater Association for a 20 year project life: $268/lb TN removed.

Irrigation and Water Quality

- Reducing irrigated area and improving efficiency is a great water conservation tool that does not preclude the use of other tools (like rate structures).
- Reducing over irrigation also improves water quality
  - Irrigation systems must be operated, maintained, and calibrated properly to maximize nutrient uptake of plants (EDIS AE479) and over irrigating has been shown to increase nitrogen losses from lawns (Morton et al 1987).

Irrigation Article V (Days of the Week) Revisions

- Expands applicability to countywide
  - currently not applicable in High Springs, Newberry, Micanopy, and Waldo
- Adds language requiring property owners to inspect systems annually
- Prohibits operation of irrigation systems with known leaks



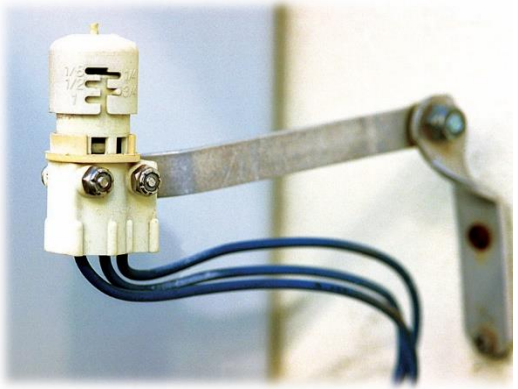
Location	Summer 2nd Sun in Mar - 1st Sat in Nov	Winter 1st Sun in Nov - 2nd Sat in Mar
Odd House #	Wed and/or Sat	Sat
Even House #	Thur and/or Sun	Sun
Non-residential/ commercial	Tue and/or Fri	Tue

Irrigation Design Code Revisions

- **BoCC initiated** (9/25/18)
  - Expands applicability to Countywide
- **Industry requested and staff recommended**
  - Clarifies that bubblers are allowed in turf zones
  - Allows single row spacing for narrow areas 4-8 ft
  - Allows pressure regulation at the valve
- **Staff recommended based on UF research findings**
  - Requires all new systems to have a soil moisture sensor or a weather based controller

Irrigation Design Code Revisions

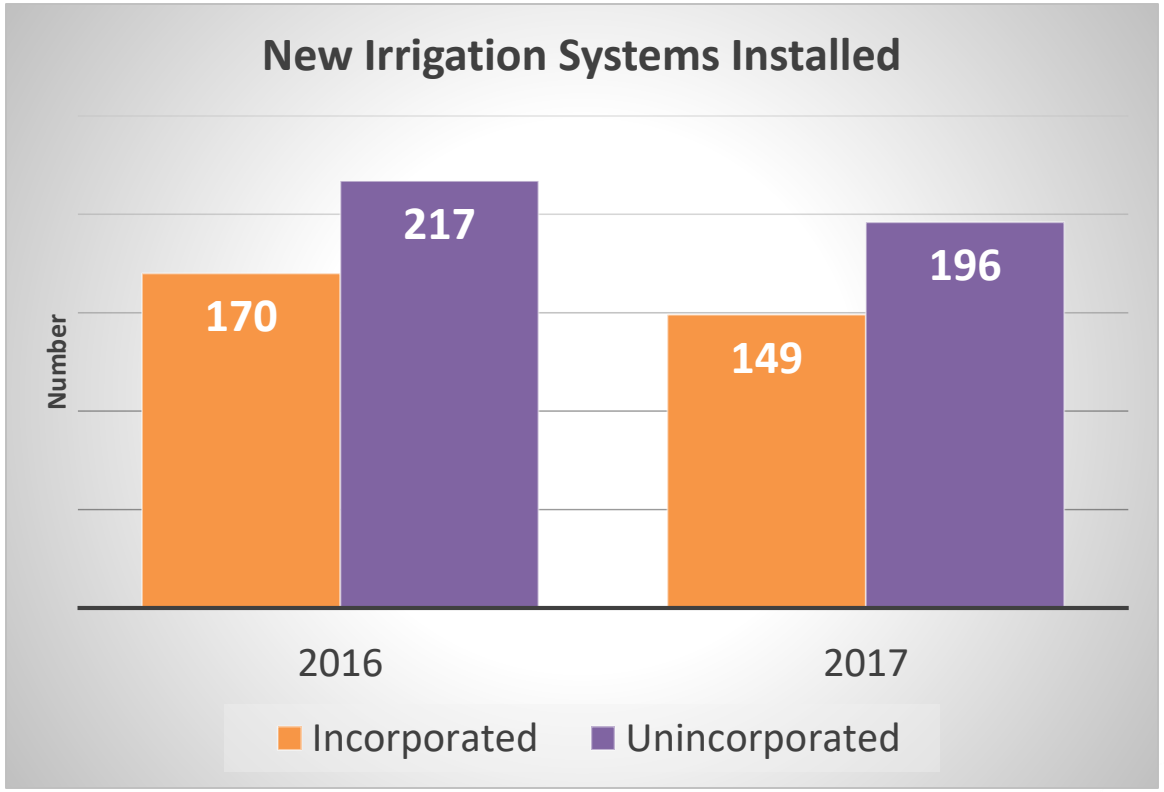
- Traditional rainfall shut off devices do not result in a reduction in irrigation
- Proposing to require smart controllers
  - Include soil moisture sensor enabled or weather based enabled irrigation controllers
  - UF findings- up to 40% water savings for single family homes with excessive irrigation in Orange County
  - Adds $150 -$350 in up front costs

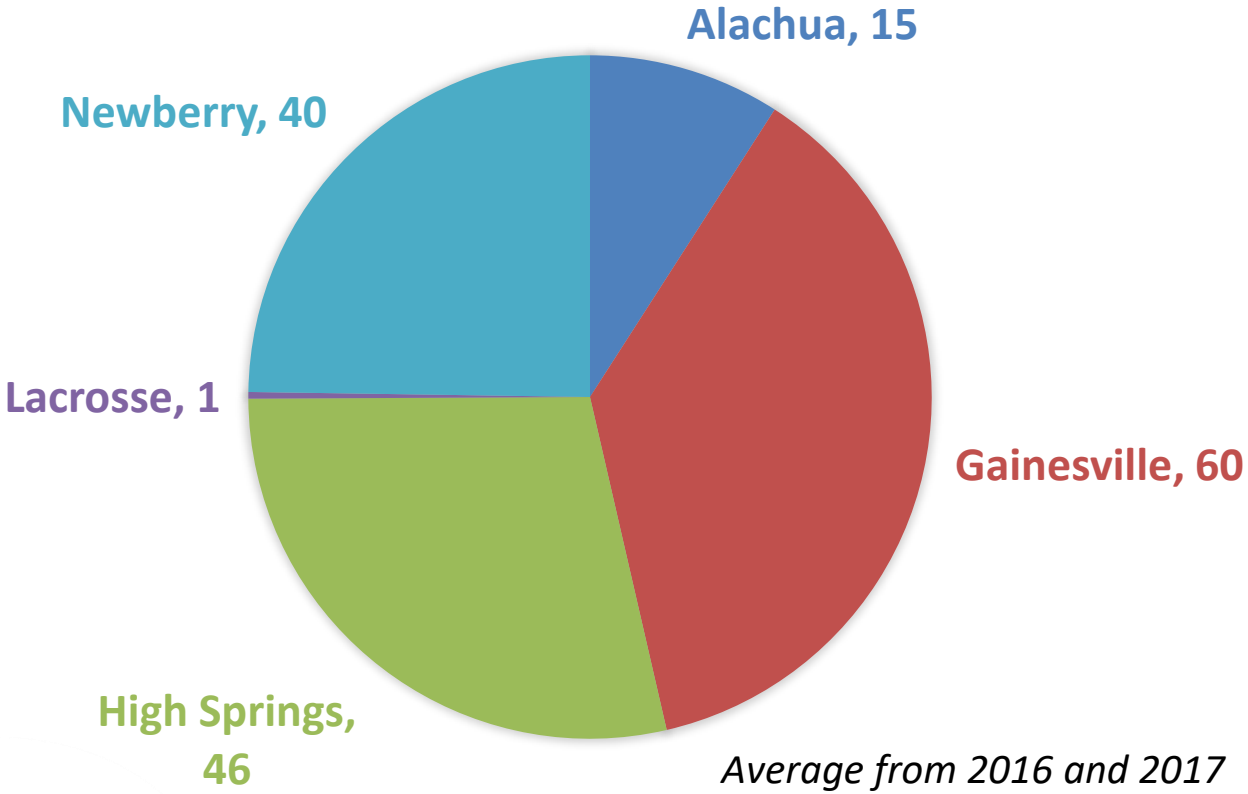


Expanded Irrigation Design Code Implementation Costs

- New Environmental Specialist at $68,000 (includes benefits, overhead, and minimal operating budget) to implement.
  - Review plans, inspections, outreach, and Tune-ups to reduce operator error
- $8,500 anticipated increase in revenue
  - Assumes 160 irrigation systems (average of 2016 and 2017 systems installed in incorporated areas)
- Staff is recommending that major changes to this article are effective 10/1/2019

Location of New Irrigation Systems

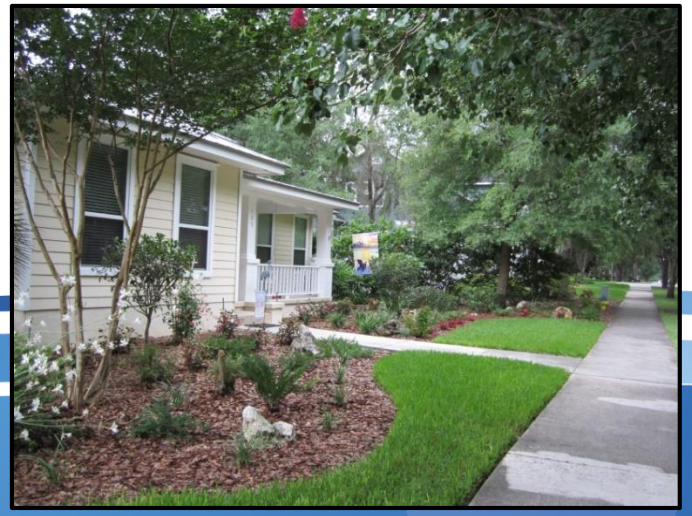




Average from 2016 and 2017

Homeowner Association Florida Friendly Landscaping™ Design Standards

- A deed restriction or covenant may not prohibit or be enforced so as to prohibit any property owner from implementing Florida Friendly Landscaping on his or her land.
- A deed restriction or covenant after 10/1/19 may not require a property owner to have a permanent irrigation system on his or her land.



Homeowner Association Florida Friendly Landscaping Design Standards- Process

- Education and outreach in partnership with UF and Extension

- Conflict Resolution steps between homeowner and HOA
    1. EPD will discuss the Code with both parties
    2. Refer parties to Extension
    3. EPD will hire an expert to determine what is and is not FFL
    4. Special Magistrate

Fertilizer Article

- EPAC Recommendation from 4/2/19
- Limit nitrogen to a minimum of 50% slow release and its use is limited to April-June
- Prohibit phosphorus unless a soil or tissue test justifies
- Staff is recommending that changes to this article are effective 10/1/2019

Slow Release Nitrogen

- Slow release nitrogen releases nitrogen over time, rather than being immediately soluble/available
- Slow release nitrogen has been documented to increase nitrogen uptake (which decreases leaching and runoff)
- Products are available, as numerous local governments in Florida have adopted this requirement including:
  - Seminole, Sarasota, Lee, Pinellas, Lake, Manatee, Charlotte, Martin, Indian River, St Lucie, Brevard, and Volusia

Phosphorus

- Naturally occurring phosphate deposits are present throughout Alachua County and contribute to the presence of phosphorus in soils.
- Turf requirements for phosphorus are relatively low.
- Phosphorus may be used if a deficiency is verified.

IFAS Research:
Nitrate Leaching from Established Grasses

- Maintenance of healthy turf mitigated nitrate losses, and when grass was not healthy nitrate losses were higher
  - Field conditions maintained by turf scientists
  - Rainfall was below average
  - Did not include mixed species typical lawns
  - Did not simulate over irrigation- which we know is key to fertilizer movement

….Its complicated

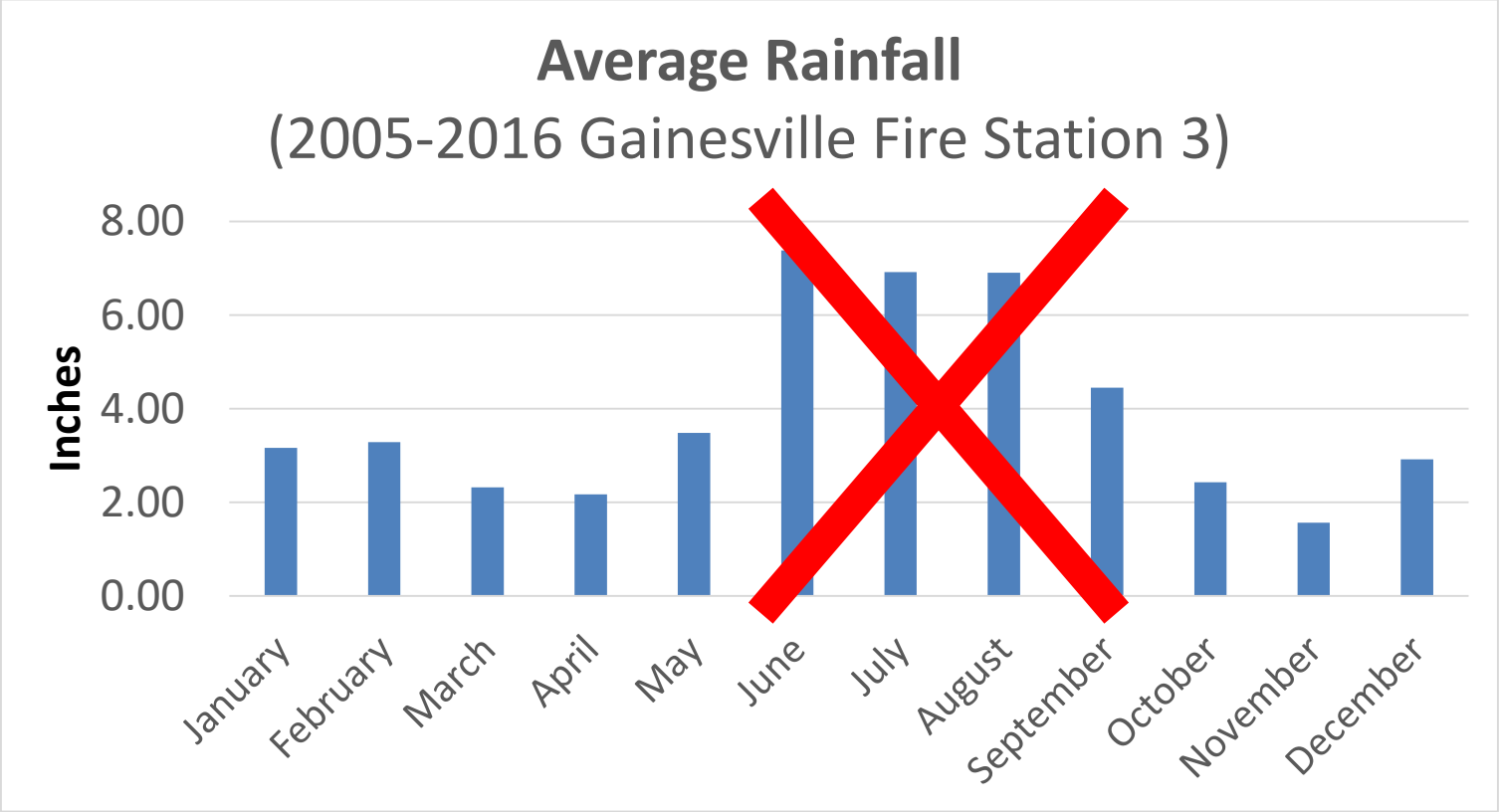
Factors that affect leaching/runoff/nutrient uptake…..

- Temperature
- Rainfall
- Irrigation practices
- Age of landscape
- Soil type
- Type/source of fertilizer
- Application rates
- Condition of turf
- Mowing height
- Pests
- Turf/plant species
- Homeowner behaviors

Why Consider a Rainy Season Black Out

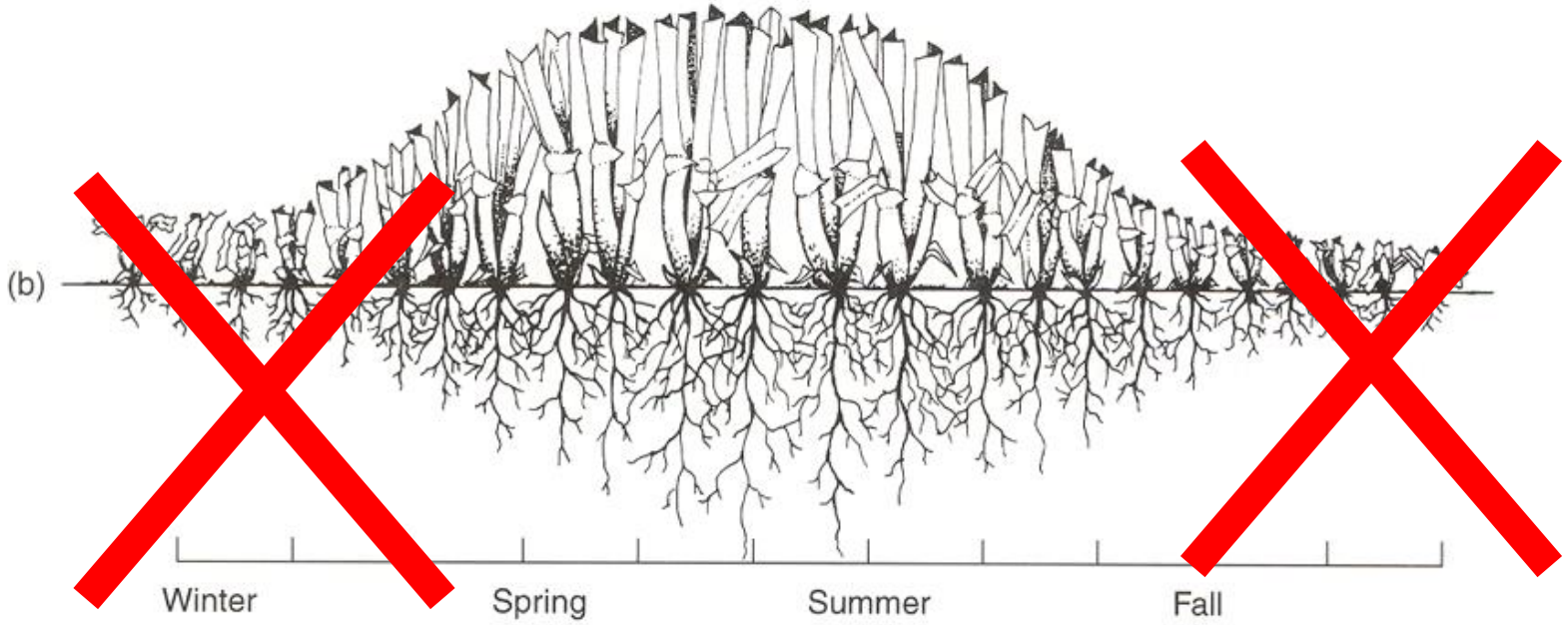
- Increased rainfall June – September increases chances for leaching and runoff

- 50% of Alachua County residents had the misconception that “it is good to fertilize before a rain” (Phone survey)

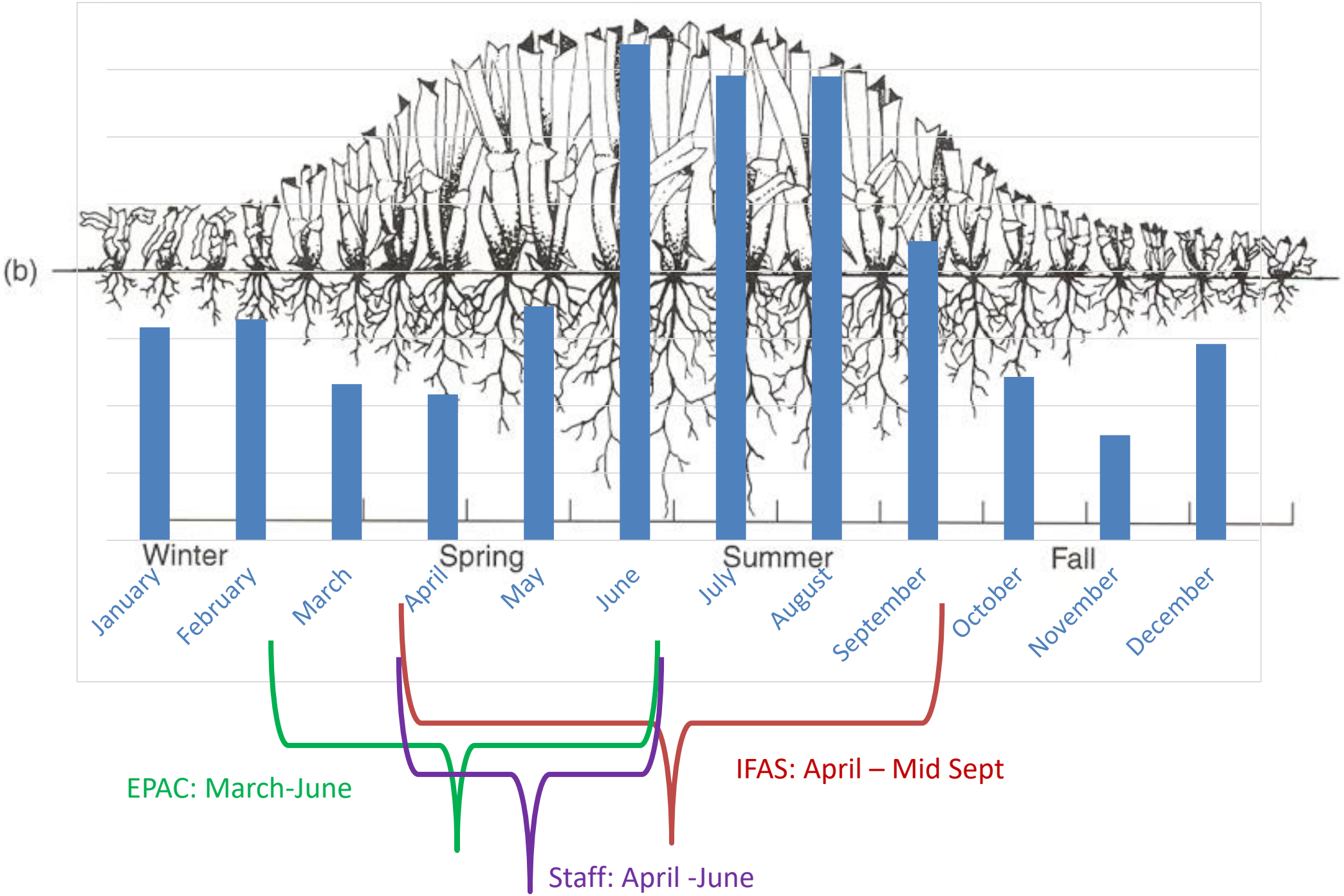


Why Consider Fall and Winter Black Out

Seasonal shoot and root growth of warm-season turfgrasses. (Turgeon, 2002)



- Decreased plant growth and root density in fall and winter (cooler temperatures, less growth, less light)
- *In north central Florida fertilizer should not be applied until April and should cease around the middle to end of September- Homeowner BMPs for Home and Lawn- UF IFAS 2018*


(b)
Winter
Spring
Summer
Fall
January
February
March
April
May
June
July
August
September
October
November
December
EPAC: March-June
IFAS: April – Mid Sept
Staff: April -June

The Lawn Care Industry Should Not be Exempt

- The GIBMP certification is a one day training (class and test) or an on-line module.
- Regardless of training, cannot predict rain events
  - How does the industry address the current Code that prohibits fertilizer application prior to 2 inches of rain in 24 hours?
- Misinformation/confusion with rates

What is our Goal?

- Alachua County wants to encourage resilient landscapes that reduce non-point pollution by not relying on irrigation and chemical inputs.
- The proposed changes are a step in this direction.

Staff Recommendation

- Adopt the proposed code revisions*
  - Stormwater quality revisions- Article III
  - Fertilizer- Article IV
  - Irrigation (days of the week)- Article V
  - Irrigation Design Standards- Article VI
  - Florida Friendly Landscaping- Article VII

- Authorize staff to advertise a public hearing to adopt minor revisions to the Unified Land Development Code to be consistent with adopted Chapter 77 revisions

**Recognize there is a FY20 budget request of $68,000 needed to implement expanding the Irrigation Design Code and other provisions countywide*