

June 16, 2016

Dear Ms. Peterson,

As a long-time supporter of the scientific research produced by the District, I was surprised to see the following quote attributed to you ***"The real challenge is local," board member Melanie Peterson said of Martin County. "Something like 80 percent of the impact on the river comes from septic tanks."*** [June 10, 2016, "Groundhog Day at SFWMD" Nancy Smith, Sunshine State News] I assume you were misquoted and have already taken steps to correct the record; or perhaps you inadvertently misspoke. If not, can you please provide the septic tank data and impact analysis supporting this statement?

As demonstrated in the attached Technical Notes:

- Martin County has done an exceptional job in reducing nutrients to the St. Lucie River through elimination of seventy wastewater package plants, conversion of more than 1,700 septic tanks to centralized sewers, and more than \$50 million in local stormwater projects. These efforts have reduced nutrient loads by more than 500,000 pounds per year of nitrogen and more than 150,000 pounds per year of phosphorus.
- On a long-term basis, Martin County septic tanks contribute ***less than 16 percent*** of the total loading of reactive nitrogen to the St. Lucie River, far less than stormwater runoff from agricultural lands (approximately 50 percent) and Lake Okeechobee discharges (approximately 30 percent).
- During periods of destructive Lake Okeechobee discharges, the contributions of Martin County septic tanks pale in comparison to nitrogen loading from the Lake. Through June 12 of this year Lake discharges have dumped into the River more than 1.8 million pounds of nitrogen. By contrast it is estimated that Martin County septic tanks contributed ***less than two percent*** of the total nitrogen load.
- According to the State's Basin Management Action Plan, a significant aspect of the "local" challenge is that almost 60 percent of the St. Lucie River watershed is agricultural land use, whereas less than 20 percent of the watershed consists of local communities. According to the State's BMAP, agricultural lands contributed approximately 75 percent of the nitrogen and phosphorus loads from the St. Lucie River watershed.

Please let me know if you were misquoted, if you misspoke, or if the District has analyses to support the statement that "80 percent of the impact on the river comes from septic tanks."

Sincerely,



Gary Goforth

TECHNICAL NOTES

Martin County has significantly reduced nutrient loading to the St. Lucie River from individual and community septic systems and through other local projects. These include

- Elimination of seventy (70) wastewater package plants, which annually prevent the discharge of more than 560,000 pounds of nitrogen and more than 140,000 pounds of phosphorus (Polley 2014).
- Conversion of more than 1,700 septic tanks to centralized sanitary sewers, removing an estimated 15,400 pounds per year of nitrogen (Fielding 2015).
- Since 2000 Martin County has invested \$50+ million in 25 stormwater projects, with approximately 30,000 pounds per year of nitrogen removal (Fielding 2015).
- As a result of these projects, Martin County has exceeded all the nitrogen load reductions required under the State's Basin Management Action Plan (BMAP); nonetheless, the County is actively planning additional septic to sewer conversion projects that will further reduce nutrient loading to the River (FDEP 2015).
- In addition, Martin County citizens voluntarily taxed themselves, generating \$75 million to support Everglades restoration and improve water quality, and acquired 45,000 acres for various CERP projects (Fielding 2015).

The contribution of nitrogen from Martin County septic tanks makes up a small proportion of the total nitrogen loading to the St. Lucie River compared to Lake Okeechobee discharges and runoff from agricultural lands. Recent estimates of loading from Martin County septic tanks by Harbor Branch Oceanographic Institute may have significantly overestimated nitrogen loadings; their estimates range from 200-300% higher than estimates prepared using FDEP methods (Goforth 2016a). Using the FDEP method, the estimated nitrogen loading from the 16,172 known septic tanks in Martin County is approximately 105,000-125,000 pounds per year. While still an important source of nitrogen to the St. Lucie River, this lower estimated range of total nitrogen loading from septic systems is relatively minor compared to long-term average Lake Okeechobee discharges (averaging approximately 1.3 million pounds/yr) and stormwater runoff from agricultural lands (averaging approximately 2 million pounds/yr). Comparing biologically reactive nitrogen, the upper estimated range of loading from septic systems constitutes less than **16 percent** of the total loading to the St. Lucie River (compared to your statement of "80 percent"), is one-half of the average annual loading from Lake Okeechobee discharges (approx. 250,000 lbs/yr), and is less than one-third of the estimated runoff from agricultural lands (approx. 390,000 lbs/yr).

During years of high Lake discharges to the River, septic tank loading pales in comparison to nitrogen loading from Lake Okeechobee. For example, through June 12 of this year Lake discharges have dumped into the River more than 133 billion gallons of polluted water, 1.8 million pounds of nitrogen, 200,000 pounds of phosphorus, and 35 million pounds of total

suspended sediment (Goforth 2016b). These loads represent approximately 60 percent, 40 percent and 95 percent, respectively, of the total estimated River inflow loads through the primary drainage canals and Ten Mile Creek. By contrast it is estimated that septic tank contributions during this period amounted to less than **two percent** of the nitrogen load.

According to the State’s BMAP, a significant aspect of the “local” challenge is that almost 60 percent of the St. Lucie River watershed is agricultural land use, whereas less than 20 percent of the watershed consists of local communities (FDEP 2013). ***According to the State’s BMAP, agricultural lands contributed approximately 75 percent of the nitrogen and phosphorus loads from the St. Lucie River watershed during the base period.*** By contrast, local communities contributed less than 20 percent of the nitrogen and phosphorus loads during the same period. According to the FDEP, it will be another year or more before actual (i.e., measured) nutrient loads will be reviewed to assess the effectiveness of agricultural BMPs in the watershed (FDEP 2015).

Lastly, most of the “local” drainage area did not flow into the St. Lucie River until after the major agricultural drainage canals (C-23, C-24, C-25 and C-44) were dug, more than doubling the original drainage area of the River. Add to that the 3.5 million acres of the Lake Okeechobee watershed that often contribute pollution to the River, and it’s easy to understand that original local watershed makes up a relatively small portion of the loading to the River.

REFERENCES

FDEP 2013. St. Lucie River and Estuary Basin Management Action Plan. June 2013.

FDEP 2015. 2015 Progress Report for the St. Lucie River and Estuary Basin Management Action Plan. December 2015.

Fielding E. 2015. Septic-to-sewer conversions offer backyard solutions for our waterways. October 21, 2015.

Goforth, G. 2016a. Estimate of Nitrogen Loading from Septic Systems in Martin County Final Draft. March 31, 2016.

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Polley, J. 2014. Inter-office Memorandum to Nicki Van Vonno. Subject: Package Wastewater Plants. August 7, 2014.