



Board of County Commissioners
Public Works Department
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August 24, 2020

VIA EMAIL

Ted Saltos, Ph.D.
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Florida Department of Environmental Protection
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Subject: Indian River County Objection to FDEP – SWIL Model Usage for BMAP Allocations
FDEP Draft Basin Management Action Plan (BMAP) Allocation Study

Dr. Saltos,

Indian River County would like to thank you and your colleagues with the Florida Department of Environmental Protection for discussing with us the concerns raised by Indian River County in a June 9, 2020 response letter regarding the draft BMAP allocations presented to the County on April 23, 2020. The follow-up meeting, held via conference call on August 20, 2020, to discuss with the County several of the issues raised in the June 9, 2020 letter, demonstrated the Department's understanding and willingness to address several of the items pointed out in the letter. Although we did not get through the entire agenda in the allotted time, the discussions held between the County, the Department, and Applied Ecology, the developers of the Surface Water Iterative Loading (SWIL) model that is being used by the Department as the basis for determining BMAP allocations, did yield some interesting talking points that we expect will be expanded upon in on-going discussions.

However, as these discussions are anticipated to continue as we work through the items outlined in our June 9, 2020 letter, Indian River County requests that the Department publicly acknowledge at the upcoming August 25, 2020 webinar meeting that the County is not in agreement with the data as presented utilizing the SWIL model allocations.

The County also requests that until such a time that the SWIL model can be utilized in a manner using verifiable inputs for this portion of the Indian River Lagoon, that the Department revert back to the previously supplied and vetted data from the Pollutant Load Screening Model (PLSM) model. The PLSM model was presented to the County on several occasions over the past 5 plus years, the latest being February 10, 2019 from Mr. Tom Frick, the Department's then Division of Environmental Assessment and Restoration Director. In all of these various presentations, the Department represented that the PLSM allocation data was accurate and trustworthy. Slightly over one year after Mr. Frick's email, the Department suddenly switched to SWIL generated allocations upon the County without prior indication that this change would occur. The SWIL generated allocations are being forced on the County, even as the SWILs developer and owner, Applied Ecology, clearly stated in the August 20, 2020 meeting that the Department's use of the SWIL model in determining allocations and reductions is done so by using the model *in a way it was not designed or intended to be used*. The County strongly agrees with the Applied Ecology statement. It is the County's opinion that the Department's misapplication of SWIL in such an inappropriate way and without prior approval and supervision of its use for this purpose by the model's developer and owner, places the validity of the results in serious doubt.

The Department indicated that it was in the process of updating certain items within the Central Indian River Lagoon basin that factored into the draft allocations that had been presented to the County on April 23, 2020 but confirmed that another model run was not being sought after the update of the data. Changes and/or updates to inputs to the model without rerunning the model seems meaningless at best, and also drew concern from Applied Ecology regarding further misuse of the model it had developed for Brevard County and had only calibrated for Brevard County.

The Department also indicated that Indian River County had several opportunities to offer input into the SWIL's development and data input, the implication being that the County is therefore responsible for any incorrect data entered into the model. This ignores the facts that SWIL's development was specifically intended to benefit Brevard County, that the program was being administered by Brevard County, and that Indian River County had no financial part in the model's development. Indian River County's portion of the model was included in order to make the model Lagoon-wide, excepting the southern IRL which is influenced by Lake Okeechobee discharges. It was not intended to specifically benefit Indian River County and was not calibrated by Applied Ecology for Indian River County. SWIL was developed to analyze the upper IRL and the Banana River, not the Central IRL. The Department's argument also ignores the fact that during most if not all of the SWIL development work, the Department was touting its PLSM results as being accurate and that it still intended to use the PLSM allocations. This fact alone was justification for the County to not spend valuable staff time on SWIL. The County has in fact been participating in the BMAP process which until April 23, 2020 was not provided with the SWIL model output allocation which is vastly different from the February 10, 2019 PLSM allocation touted as accurate by the Department.

As stated above, Indian River County appreciates efforts put forth by the Department to discuss several of our documented concerns, but until a point at which the basis for BMAP loadings and reductions within the Central Indian River Lagoon can be fully and reliably vetted and calibrated for the inputs unique to the Indian River County portion of the Indian River Lagoon, the County will remain in disagreement with those values.

Again, the County requests that the Department revert back to the PLSM allocation it previously submitted to the County on numerous occasions, as recent as February 10, 2019, and that the Department publicly acknowledge at the upcoming August 25, 2020 webinar meeting, that Indian River County is not in agreement with the data as presented utilizing the SWIL model allocations.

Regards,



Richard B. Szpyrka, P.E.
Indian River County
Public Works Director

Attachment: June 9, 2020 Indian River County Objection Letter

Cc: Jason Brown, County Administrator
Dylan Reingold, County Attorney
Vincent Burke, P.E., Utilities Director
Keith McCully, P.E., Stormwater Engineer
Eric Charest, Natural Resources Manager
Brian Sullivan, Legislative Affairs and Communications Manager
Tiffany Busby, Wildwood Consulting Inc.



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June 9, 2020

VIA EMAIL

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Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
Theodore.Saltos@floridaDEP.gov

Subject: FDEP Draft Basin Management Action Plan (BMAP) Allocation Study
Indian River County Objections to FDEP Model Usage for BMAP Allocations

Dr. Saltos,

Indian River County (County) staff has partially reviewed the draft BMAP allocations and methodology used by the Florida Department of Environmental Protection (FDEP) in computing its total nitrogen and total phosphorus starting load determinations assigned to the County, which were presented to the County by FDEP on April 23, 2020. In your email of June 8, 2020, you stated that if the County does not respond to FDEP by 5:00 pm Tuesday, June 9, 2020, FDEP will make the assumption that the “jurisdictional boundary on record is accurate and that you have no comments regarding the allocations discussed on April 23, 2020.” A thorough review of a major portion of the information was performed and the review efforts by the County to date have revealed that the information has flaws and does not accurately represent the land areas and uses within the County, creating a significantly inaccurate and excessive starting load that produces inaccurate results. As such, the County respectfully requests FDEP investigate in detail, the items below in order to update the information contained in the Indian River County Draft Allocations April 2020 document issued by your Division.

As we have discussed, the draft allocation information that you presented to the County on April 23, 2020 was in stark contrast to information previously supplied regarding proposed BMAP starting loads and Total Maximum Daily Loading (TMDL) values (initially presented to the County in draft form by FDEP in December 2015). The County is aware that FDEP has changed models used in the determination of the loadings, which was alleged to provide a more accurate representation of the land uses and associated loadings within the subject area. The Spatial Watershed Iterative Loading (SWIL) model used by FDEP was developed by Applied Ecology for Brevard County’s approach at scientifically addressing TMDLs. The County believes that FDEP must ground truth the input data and verify model results against real world data in Indian River County, comparing model runs to various actual rainfall duration and frequency events in Indian River County. This is extremely important because the computer model’s results and FDEP’s

resulting pollutant load allocations will produce tremendous financial burdens on the County and other governmental entities along the Lagoon amounting to hundreds of millions of dollars. Fortunately, a large part of the County drains into the Lagoon via only three distinct Indian River Farms Water Control District relief canals through well-defined watersheds, and therefore such real world validations should be relatively simple to accomplish and should be the *minimum* standard for a computer model whose results will produce such significant financial implications to the County and its citizens.

The County, along with other stakeholders within the Central Indian River Lagoon Basin Management Action Plan, have grave concerns over the validity of County Property Appraiser data being used for purposes other than what it was intended for. County Property Appraiser data should not replace “aerial photointerpretation” or ground validation (SWIL Report 2015) as the basis in the development of the SWIL model to determine the Event Mean Concentrations (EMC), and ultimately the starting loads for the County. FDEP should not utilize unvalidated data in a computer analysis that produces important policy results.

Discrepancies in land use application has cascading effects in the SWIL model for stakeholders. Property incorrectly classified adjusts the EMCs which drive the loading allocated to the property. As seen in attached Exhibit A, the small basin subsection that the County Geospatial Information System (GIS) Department focused on for truthing the model assumptions for the Water Consolidated Land Use Code, demonstrated a significant change in acreage and land use when more closely reviewed. In this one-mile by two-mile randomly reviewed section, the *unverified* model assumptions for the Water Consolidated Land Use Codes were found to be off by nearly 31% in the lands assigned to the County.

Ten distinct Consolidated Land Use Codes were incorrectly used in areas that should have been identified as Water (see the list of incorrectly used Consolidated Land Use Codes in attached Exhibit B). That correction alone lowers the starting load in that small section of the County by 1,075.41 lbs. of total nitrogen (TN) and 170.25 lbs. of total phosphorus (TP).

When spot checking Consolidated Land Use Codes against the Event Mean Concentrations in that sample area, County staff discovered inconsistencies on the EMCs and thus the calculated loadings. The SWIL model showed 41.07 acres of Water with associated TN and TP loadings of 53.95 lbs. and 7.69 lbs., respectively. Page 37 of the 2015 SWIL Report shows that the EMC for Water to be zero (0) for both TN and TP, therefore the calculated loading for the 41.07 acres of Water should have been zero (0) for TN and TP.

In addition to land use issues in the SWIL model, County staff also identified Indian River Farms Water Control District rights-of-way that were initially not allocated to that entity. Correcting that information moves some of the allocation incorrectly assigned to the County back onto the appropriate entity.

The topic of Natural Lands and the property use codes that go into Natural Lands is unclear to the County. FDEP tables represent significant loadings attributed to Natural Lands, yet we are unable to find a Consolidated Land Use category identified as Natural Lands, and therefore are unable to find the EMC values used for loading calculations. As Natural Lands have no anthropogenic loadings associated with them, the requirement proposed in the draft allocations to have a required reduction for Natural Lands passed on to the entity in which the Natural Land resides contradicts rationale used in recently issued BMAPs in other regions. For example, the St. Lucie River and Estuary BMAP (January 2020), which has been pointed to by FDEP as a reference for County review, asserts certain assumptions in their model, such as: “The allocations do not include required load reductions from areas identified as *natural land use areas* in the 2012 SFWMD land use coverage. *These loads are considered uncontrollable, background sources,*

and the stakeholders are not required to make reductions on natural lands. The focus of the BMAP allocations is on urban and agricultural stormwater sources and septic tanks in the watershed.”

Since our April 23, 2020 meeting, County staff has accrued well over one hundred man hours in its cursory review of the Draft Allocations presented by FDEP and reached out to model developer Applied Ecology in search of Technical Memos referenced in the SWIL Report. We appreciate that FDEP is developing the BMAP, but the initial County cursory investigation identified important and significant errors and questionable assumptions by FDEP, which produced incorrect results. In order to proceed with further review, the County respectfully requests that these issues be resolved.

County staff looks forward to receiving FDEP’s review and model verification schedule in the near future. This allocation study has far reaching ramifications to all stake holders and has the potential to cost hundreds of millions of taxpayer dollars to address, therefore accuracy of the Allocation Study is a key component to efficient expenditure of tax dollars to address this issue.

Regards,



Richard B. Szpyrka, P.E.
Indian River County
Public Works Director

Attachments: Exhibit A
Exhibit B

Cc: Jason E. Brown, County Administrator
Dylan Reingold, County Attorney
Vincent Burke, Utilities Director
Keith McCully, P.E., Stormwater Engineer
Eric Charest, Natural Resources Manager
Brian Sullivan, Legislative Affairs and Communications Manager

Exhibit A

Review of Central Indian River Lagoon Basin Management Action Plan Draft Allocations for Indian River County

Figure 1

Overlay of Water confirmed in subsection of Indian River County area
■ represents field verified Water



Review of this 1 mile X 2 mile sample section of the County by IRC GIS staff identified 133.4 Acres of Consolidated Land Use Code Water.

Based on Event Mean Concentrations, the TN Loading should equal 0 lbs, and the TP loading should equal 0 lbs

Total Indian River County draft allocation for this sample section was presented to be approximately 12,489 lbs TN and 1,868 lbs TP (including Natural Lands). Correctly identifying Consolidated Land Use Code Water reduced the TN loading by 1,075.4 lbs TN and a TP reduction of 170.25 lbs for Indian River County and Natural Lands assigned properties.

A reduction of 8.6% TN and 9.1% TP based on that single incorrectly identified Consolidated Land Use Code.

Figure 2

FDEP Consolidated Land Use Code Water
■ represents FDEP correctly identified Water



FDEP SWIL Model data for this same section only showed 41.07 Acres correctly identified as Water, but with a TN Loading of 53.95 lbs and a TP Loading of 7.69 lbs.

Based on Event Mean Concentrations, the TN Loading should have been equal to 0 lbs, and the TP loading should have been equal to 0 lbs

Exhibit B

Review of Central Indian River Lagoon Basin Management Action Plan Draft Allocations for Indian River County

FDEP BMAP Data Consolidated Land Use Code		IRC Verified Water Consolidated Land Use Code		Suggested Revision Consolidated Land Use Code (2015 SWIL Report)	
23	Water	3	Commercial	23	Water
		4	Dry Prairie		
			High Density		
		5	Residential		
			Low Density		
		9	Residential		
			Medium Density		
		10	Residential		
		15	Recreational 1		
		16	Recreational 2		
		21	Upland Flatwoods		
		23	Water		
		24	Wet Flatwoods		
41.07	Acres	133.4	Acres	133.4	Acres
53.95	TN Loading (lbs)	1075.4	TN Loading (lbs)	0	TN Loading (lbs)
7.69	TP Loading (lbs)	170.25	TP Loading (lbs)	0	TP Loading (lbs)