



Save the Manatee® Club

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Gary E. Williams, Ph.D.

Natural Systems and Restoration Bureau

Southwest Florida Water Management District

2379 Broad Street

Brooksville, Florida 34604

April 5, 2012

Re: Gum Slough MFL

Dear Dr. Williams,

As we have previously expressed in other MFL reviews throughout the SWFWMD (Homosassa, Chassahowitzka), while we support the establishment of MFLs, we question the methodology and rationale used to set these minimum flows. **We do not support the proposed 9% flow removal for the Gum Slough Springs System that has been proposed in the District's draft report.** We understand that MFLs must be set using the best available science but we believe that extreme conservativeness should be applied when attempting to set parameters using suboptimal data sets. We contend that the data available for Gum Slough represent such a suboptimal data set, as continual flow data prior to 2003 are lacking. Such "limited discharge records" as they are characterized in the Peer Review Report present a great amount of uncertainty to the modeling efforts undertaken. The available data simply do not extend far back enough in time to understand the historic flow and health of this system. Modeling of such limited data cannot be expected to yield accurate results.

We also continue to question the use of the 15% threshold to indicate significant harm and completely disagree with the following conclusion from the Peer Review Panel: "Ultimately, experimental studies that examine the effects of a variety of percentage losses of habitat on multiple species of interest would test the assumption that 15% is protective, but until such research is completed the current value in use has merit." We do not agree that the use of 15% is acceptable, particularly without adequate experimental study. Furthermore, given the evidence for existing declines

in water quality and water flow at this site, it is unclear how any reductions in flow can be authorized when the system appears to be a prime candidate for a recovery strategy.

As a general comment, the District may find itself criticized for using a method (Perry 1995) to determine baseflow separation that is only documented in a doctoral thesis from 1995 and has not been peer-reviewed and published in the scientific literature.

It is completely unclear how the Peer Review Panel came to accept the draft report given their determination of the insufficiency of the water chemistry data and questioning of the QA/QC process used by the District in evaluating these data; their acknowledgment of the limited data set used to model this system; their disagreement with the metric used to assess ecological integrity; their recognition that "... water quality, linked with flows in the spring run, seems to be having a significant impact on the biota of the spring run. Nutrient concentrations reported for in spring water suggest an input of water with higher than previous background levels. Nutrient loading clearly is an issue considering the growth of aquatic vegetation and algae observed near the source spring."; and their recognition that there is no understanding of the underground plumbing of the 7+ springs that make up this system, including no confirmation of the source waters of each spring. While the Peer Review Panel suggests extra data collection at this site, there is little guarantee of such work receiving funding and perhaps even less hope that a more protective MFL would be implemented in the future if necessary, given recent trends in cutting WMD staffing and budgets.

In addition to reviewing the District's publications for Gum Slough, we also reviewed a recent Final Report from Wetland Solutions, Inc. entitled "An Ecosystem-Level Study of Florida's Springs- Part II—Gum Slough Springs Ecosystem Characterization." The report was prepared for the Florida Fish and Wildlife Conservation Commission's Florida's Wildlife Legacy Initiative and State Wildlife Grants Program and was published in December 2011. The findings of this report appear to conflict with the District's proposal to allow reduced flows from Gum Slough Springs. Wetland Solutions found rising nutrient concentrations and declining flows in this system, which they attribute to urban and agricultural land uses in the springshed (even though Gum Slough Springs itself is in a relatively undeveloped area). The study also found that "nitrate nitrogen concentrations in the springs are substantially above background levels and flows recorded since 2003 have markedly decreased" (p.4). Below are several quotes from this report which we believe provide rationale for adopting a more protective MFL for Gum Slough than what is currently proposed by the District:

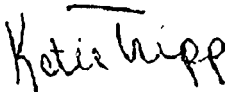
- "Based on LOESS and linear trend lines, it appears that, since the installation of the USGS Gauge, flows in Gum Slough have experienced more than 50% decline... Based on LOESS smoothed monthly

rainfall, decreases in rainfall have been approximately 15% over the same period.... The difference between the estimated decline in rainfall and flow indicates that groundwater withdrawals have contributed to reductions in flow in Gum Slough during the existing period-of-record” (p.16).

- “Estimated fish biomass was lower than all of the other studied springs. Lower fish biomass may be the result of lower flows and resulting reduced primary productivity in the study area, resulting in lower food-chain support and secondary productivity” (p.18).
- “Although fish productivity was not estimated, the low fish biomass documented in Gum Slough indicates possible indirect connection between the effects of spring flow declines, lower primary productivity, and resulting reduced wildlife biomass. Synergistic effects between elevated nitrate concentrations (currently averaging about 0.9 mg/L in Gum Slough) and reduced flows on wildlife populations and productivity are also likely. Some of the reduced primary productivity is possibly a result of the increased dominance of filamentous algae and apparent reduced cover of the better adapted submerged aquatic plants that formerly dominated these spring runs” (p.27).
- “Similar to most springs that have extended monitoring records, the Gum Slough Springs Group is experiencing recent declines in flow that might be partially attributable to increasing rates of anthropogenic groundwater consumption. When combined with natural drought cycles, resulting reductions in spring flow can be drastic as was observed at Gum Slough during this study. As the uppermost springs stopped flowing during the 2011 study period, the upper reach of Gum Slough shrank in area and volume and fish and wildlife habitat was proportionally reduced. Resulting reductions in primary productivity changed the ecosystem structure and function of this upper segment of Gum Slough and its contribution to downstream fish populations” (p.27).
- “If continued flow declines occur at Gum Slough, it is possible that the portion of Gum Slough above the Midpoint could stop flowing entirely during periods of low rainfall and that a sizable fraction of the existing aquatic wildlife habitat could be lost. It is the recommendation of this report that some routine level of ecosystem monitoring continue at Gum Slough and that a restoration effort be considered to protect Gum Slough from the detrimental effects of encroaching development in its springshed” (p.28).

Given the paucity of data available for Gum Slough and the findings of the Wetlands Solution report, we respectfully request that an MFL be adopted for this system which allows a 0% reduction in flow. We support continued data collection at this site and understand that the District may wish to revisit the Gum Slough MFL in the future, but find no justification or logic to implementing a 9% flow removal at this time. Thank you for the consideration of these comments.

Sincerely,



Katie Tripp, Ph.D.

Director of Science and Conservation