EcoSummary

Wakulla Springs

8/23/2002

Background

The Florida DEP Bureau of Laboratories has been conducting quarterly sampling of the Wakulla River within the boundaries of Wakulla Springs State Park, just below the tour boat turn-around area. Data from these efforts will be used for documenting conditions within the basin and for making resource protection decisions. Wakulla Springs State Park is located in Wakulla County, Florida; see Figure 1. The Wakulla River begins in the park, flows south, and joins the St. Mark's River before flowing into the Gulf of Mexico. Wakulla Springs is a Floridan Aquifer-dominated system known for its recreational and aesthetic qualities.

Wakulla Springs was sampled on August 23, 2002 as part of the quarterly monitoring program and to determine the long term results of the April, 2002 Aquathol® herbicide treatment. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, *Enterococci*, fecal coliform, total coliform, and other analyses; see Figure 2. Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted.

Results

Ammonia, TKN, and total phosphorus concentrations remain low; see Figure 2. The nitrate-nitrite concentration (0.56 mg/L continued to be elevated, higher than approximately 85% of Florida streams. Note that the sampling site is approximately a mile downstream from the spring boil, and nutrients there are expected to be lower than those at the boil due to uptake by the vegetation in the river. The habitat assessment score (136) was in the optimal category in August 2002. This score is higher than the April 2002 score (115), which was evaluated before the Aquathol® herbicide treatment.

In August 2002, *Enterococci* concentration (8 CFU/100 mL) was below the EPA single-sampling guideline value of 61 CFU/100 mL for designated beach areas. Fecal and total coliform levels complied with Class III water quality standards.

The stream condition index (SCI) ranked in the "poor" category (17) in August 2002; see Figure 2. This score is slightly lower than the SCI score (21) in April 2002, which followed the herbicide treatment. Visual observations indicated that there was some additional re-growth of *Hydrilla* during this sampling, although the habitat assessment overall score was in the optima category. The periphyton community was dominated by taxa tolerant of nutrient enriched conditions.

In conclusion, nitrate-nitrite concentrations remain elevated. The periphyton community also reflects nutrient enrichment. The poor health of the macroinvertebrate community may be related to the partial re-establishment of the *Hydrilla* population. Further monitoring is recommended to establish trends.

Figure 1: Overview Map

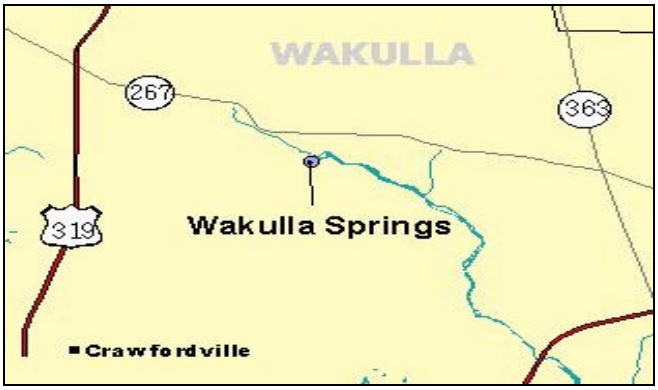
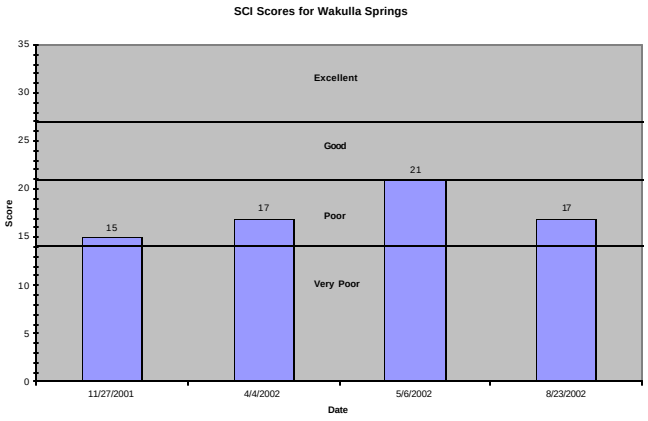


Figure 2: Data Table

Wakulla Springs			
Sampling Date		8/23/2002	
Macroinvertibrate Parameters		**Periphyton Parameters**	
SCI	17	% Bacillariophyceae	95.91
SCI Evaluation	Poor	% Cyanophyceae	2.97
Number of Taxa	18	% Chlorophyceae	1.12
EPT Index	2	Dominant taxon	*Cocconeis placentula*
FL Index	10	Percent Dominant taxon	13.57
% Dominant Taxon	65.29	**Physical-Chemical Data**	
% Diptera	21.49	Habitat Assessment	136
Total number of Chironomidae	7	Specific Conductivity (umhos/cm)	289
% Filter-Feeders	7.44	Dissolved Oxygen (mg/L)	7.6
Chemistry Data		pH (SU)	7.2
Ammonia (mg/L)	0.023	Temperature (deg C)	22.1
Nitrate-Nitrite (mg/L)	0.56	**Bacteria Parameters**	
TKN (mg/L)	0.06 U	*Enterococci* (col/100mL)	8
Total Phosphorus (mg/L)	0.036 I	*Escherichia coli* (col/100mL)	-
Color (PCU)	5 U	Fecal Coliforms (col/100 mL)	4
Turbidity	0.35	Total Coliforms (col/100mL)	80

"I"-Below Quantitation Limit; "U"- Below Detection Limit

Figure 3: SCI Scores Over Time



FOR MORE INFORMATION, CONTACT:
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