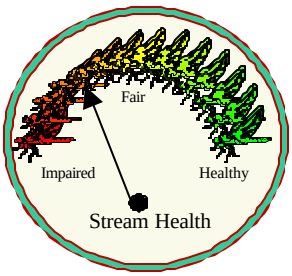


EcoSummary



Wakulla Springs

1/16/2003

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 river 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 was sampled on January 16, 2003 as part of the quarterly monitoring program and to determine the long term results of the April 8, 2002 and November 20, 2002 Aquathol® herbicide treatments. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, *Enterococci*, *Escherichia coli*, 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 continue to remain low; see Figure 2. . The nitrate-nitrite concentration was elevated (0.54 mg/L), higher than the values found in approximately 85% of other 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 (139) was in the optimal category in January 2003.

In January 2003, *Enterococci* (6 CFU/100 mL) and *Escherichia coli* (24 CFU/100 mL) densities were below the EPA single-sampling guideline value of 61 CFU/100 mL and 235 CFU/100 mL, respectively, 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 October 2002; see Figure 2. This score is lower than the SCI score in October 2002 (23), potentially due to partial re-growth of *Hydrilla*, although the habitat assessment score was in the optimal category. The cause for the reduction in the SCI score was not readily apparent. 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 decreased health of the macroinvertebrate community may be related to the partial re-establishment of the *Hydrilla* population or some other factor. Further monitoring is recommended to establish trends.

Figure 1: Overview Map

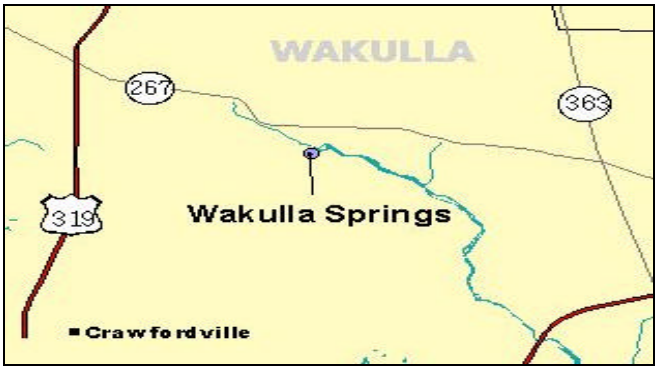
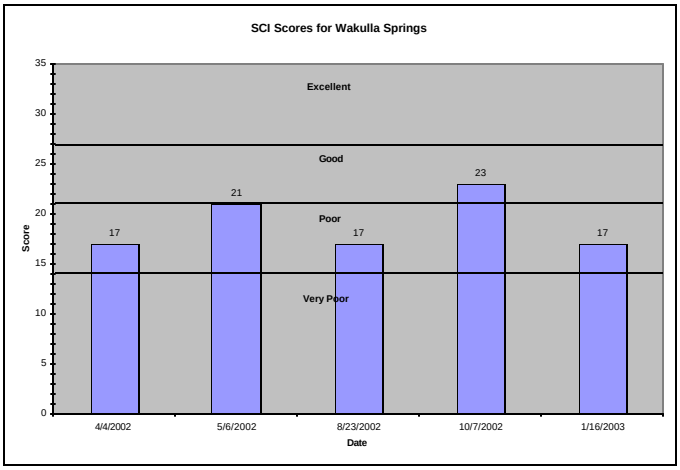


Figure 2: Data Table

Wakulla Springs			
Sampling Date		1/16/2003	
Macroinvertibrate Parameters		**Periphyton Parameters**	
SCI	17	% Bacillariophyceae	86.77
SCI Evaluation	Poor	% Cyanophyceae	7.74
Number of Taxa	20	% Chlorophyceae	5.48
EPT Index	2	Dominant taxon	*Cocconeis placentula*
FL Index	11	Percent Dominant taxon	40.32
% Dominant Taxon	45.28	**Physical-Chemical Data**	
% Diptera	14.15	Habitat Assessment	139
Total number of Chironomidae	7	Specific Conductivity (umhos/cm)	276
% Filter-Feeders	3.77	Dissolved Oxygen (mg/L)	3.21
Chemistry Data		pH (SU)	7.49
Ammonia (mg/L)	0.01 U	Temperature (deg C)	19.37
Nitrate-Nitrite (mg/L)	0.54	**Bacteria Parameters**	
TKN (mg/L)	0.096 I	*Enterococci* (col/100mL)	6
Total Phosphorus (mg/L)	0.04 I	*Escherichia coli* (col/100mL)	24
Color (PCU)	15	Fecal Coliforms (col/100 mL)	40
Turbidity	0.65	Total Coliforms (col/100mL)	90

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

Figure 3: SCI Scores Over Time



FOR MORE INFORMATION, CONTACT:
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