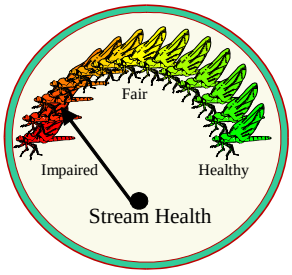


EcoSummary

Wakulla Springs

4/11/2006



Background

The Florida DEP Bureau of Laboratories conducts quarterly sampling of the Wakulla River within the boundaries of Wakulla Springs State Park, at a site located just below the tour boat turn-around area. Data from these efforts are 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 is a Floridian Aquifer-dominated system and is known for its recreational and aesthetic qualities.

Wakulla Springs was sampled on April 11, 2006 as part of the quarterly monitoring program. Water chemistry samples were collected 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, and benthic invertebrate stream condition index (SCI) sampling were also conducted. See Figure 3 for SCI scores over time.

Figure 1: Overview Map of the Wakulla Springs Area



Results

The nitrate-nitrite concentration in Wakulla Springs (0.37 mg/L) was lower than the values found in 90% of Florida streams (0.64 mg/L or lower); see Figure 2. Ammonia was below detection limits. Note that the low results for both nitrate-nitrite and ammonia may have been partially related to the improper sample preservation. The total phosphorus concentration was below practical quantitation limits. Since the sampling site is about a mile downstream from the spring boil, nutrients are expected to be lower than those at the boil due to uptake by the heavy growth of vegetation in the river.

Enterococci and *Escherichia coli* concentrations complied with the EPA single-sample guideline values of 61 CFU/100mL and 235 CFU/100 mL, respectively, for "designated beach areas." Fecal and total coliform levels complied with Class III water quality standards.

The overall habitat assessment score (129) was in the "optimal" range. Diatoms, with some blue-green and green algal taxa, dominated the periphyton community. The SCI score (20) for Wakulla Springs was in the "poor" range. The low SCI score is potentially related to periodic habitat smothering and low dissolved oxygen levels associated with excess *Hydrilla* growth. Previous diel dissolved oxygen measurements have shown night time DO levels below 3.0 mg/L, in the vicinity of the sampling site, during periods when *Hydrilla* was abundant. This phenomenon is related to respiration and decomposition of the *Hydrilla*. Although there were no diel dissolved oxygen measurements associated with this sampling, it is possible that low night time dissolved oxygen continues to stress the invertebrate community. In conclusion, elevated nitrate-nitrite concentrations and *Hydrilla* control continue to be the issues of concern in Wakulla Springs.

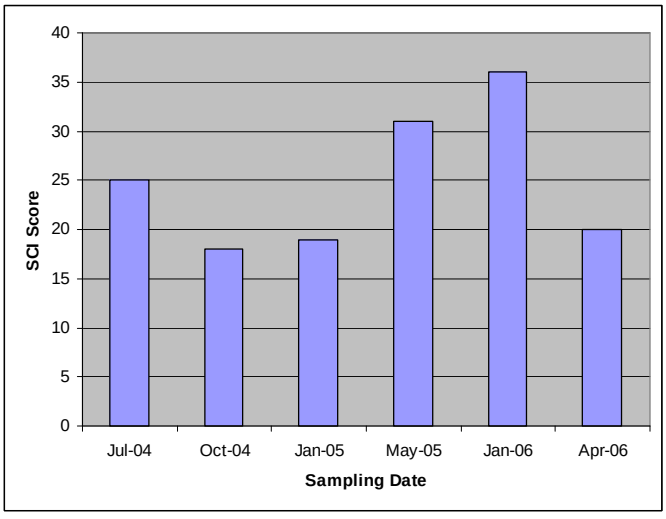
Figure 2: Data Table

WAKULLA SPRINGS			
Sampling Date	4/11/2006	**Physical-Chemical Data**	
Macroinvertebrate Data		Habitat Assessment Score	129
SCI Score	20	Temperature (deg. C)	20.2
SCI Evaluation	poor	pH	7.65
Chemistry Data		Dissolved Oxygen (mg/L)	6.57
Turbidity (NTU)	0.25	Specific Conductance (umhos/cm)	317
Color (PCU)	5	**Bacteria Data**	
Ammonia (mg/L)	0.01 UY	*Escherichia coli* (col/100 mL)	34 AB
Nitrate-Nitrite (mg/L)	0.37 Y	*Enterococci* (col/100 mL)	12 AB
TKN (mg/L)	0.08 U	Fecal Coliforms (col/100 mL)	67 A
Total Phosphorus (mg/L)	0.026 I	Total Coliforms (col/100 mL)	120 A

"U"=Below detection limit; "I"=Below practical quantitation limit; "Q"=Outside of holding time; "B"=Results based on colony counts outside the acceptable range "A"- Value Reported is the Mean of Two or More Determinations

"Y"=Sample was improperly preserved.

Figure 3: SCI Scores Over Time



FOR MORE INFORMATION, CONTACT:
Hoss Agharahimi, FDEP Environmental Assessment
2600 Blair Stone Road MS#6511 Tallahassee, FL 32399-2400 (850) 245-8071 hoss.aghharahimi@dep.state.fl.us