EcoSummary

Rock Springs

10/22/02

Background

Florida DEP's Division of Water Resource Management selected Rock Springs for biological and water quality monitoring. Data from these efforts will be used for documenting conditions within the spring run and for making resource protection decisions. Rock Spring is located inside Kelly Park in Orange County, Florida (Figure 1). Rock Spring flows into the Wekiva River. Rock Springs is a Floridan Aquifer-dominated system known for its recreational and aesthetic qualities.

Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen, total phosphorus, color, turbidity, *Enterococci*, *Escherichia coli*, fecal coliform, and total coliform analysis (Figure 2). Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted.

Results

The nitrate-nitrite concentrations (1.5 mg/L) at the sampling site were higher than those found in 95% of Florida streams (1.05 mg/L) (Figure 2). Elevated nitrite-nitrate levels in Rock Springs are related to nitrogen loading in the recharge basin. The total Kjeldal nitrogen and ammonia concentrations (0.23 mg/L and 0.018 mg/L respectively) were lower than those found in 95% of Florida streams (Figure 2).

Enterococci and Eschericia coli densities complied with the EPA single-sample guideline value of 61 CFU/100mL and 235 CFU/mL, respectively, for "designated beach areas." Fecal and total coliform levels complied with Class III water quality standards. The periphyton community in Rock Springs was dominated by diatoms with some blue-green taxa. The particular taxa found were indicative of eutrophic conditions, which was not surprising given the nutrient enrichment in Rock Springs. The stream condition index (SCI) score of 15 was in the "poor" range. With a habitat assessment score in the optimal range (139) the benthic invertebrate community was not limited by habitat quality. The area sampled experiences heavy recreational use and is subject to physical disturbance, which may explain the depressed SCI score. Further study is recommended.

In conclusion, elevated nitrate-nitrate levels, an algal community indicative of eutrophic conditions, and a poor SCI score were issues of concern in Rock Springs.

Figure 1: Overview Map of the Rock Springs Area

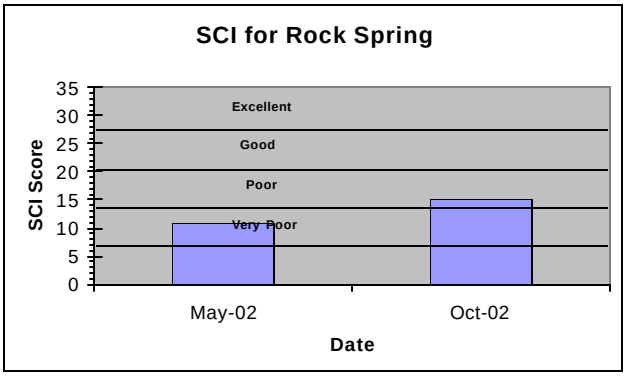


Figure 2: Data Table

Rock Springs			
Sampling Date		10/22/2002	
Macroinvertibrate Parameters		Periphyton Parameters	
SCI	15	% Bacillariophyceae	79.01
SCI Evaluation	Poor	% Cyanophyceae	17.9
Number of Taxa	11	% Chlorophyceae	2.78
EPT Index	0	Dominant taxon	Diatomaceae/Fragilariaceae
FL Index	5	Percent Dominant taxon	29.94
% Dominant Taxon	45.45	Physical-Chemical Data	
% Diptera	13.64	Habitat Assessment	139
Total number of Chironomidae	5	Specific Conductivity (umhos/cm)	267
% Filter-Feeders	1.36	Dissolved Oxygen (mg/L)	1.47
Chemistry Data		pH (SU)	7.37
Ammonia (mg/L)	0.018 I	Temperature (deg C)	23.8
Nitrate-Nitrite (mg/L)	1.5	Bacteria Parameters	
TKN (mg/L)	0.23	*Enterococci* (col/100mL)	30 Q
Total Phosphorus (mg/L)	0.096 J	*Escherichia coli* (col/100mL)	1 KQ
Color (PCU)	5 U	Fecal Coliforms (col/100 mL)	20 Q
Turbidity (NTU)	0.05 U	Total Coliforms (col/100mL)	20 Q

"A"- Average; "J"- Estimated Value; "Q"- Information Only, "U"-Below minimum detection limit; "I" –Value between method detection limit and practical quatitation limit

Figure 3. SCI Evaluation for Rock Spring



FOR MORE INFORMATION, CONTACT:
Thomas Deck, FDEP Environmental Assessment Section
2600 Blair Stone Road MS#6511 Tallahassee, FL 32399-2400 (850) 245-8074 thomas.deck@dep.state.fl.us