EcoSummary

Rock Springs

4/17/02

Background

Florida DEP's Division of Water Resource Managment 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 Wekiva River. Rock Springs is a Floridan Aquifer-dominated system and is 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 (1.4 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 ammonia, and total Kjeldal nitrogen concentrations (0.01 mg/L, and 0.06 mg/L respectively) were below the minimum detection limit.

Enterococci and Eschericia coli densities complied with the EPA single-sample guidline value of 61 CFU/100mL and 235 CFU/mL, respectively, for "designated beach areas." Fecal and total coliform levels were below the Class III water body water 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 11 for Rock Spring was in the "very poor" range. With a habitat assessment score in the optimal range (134) the benthic invertebrate community was not limited by habitat availability or quality. The area sampled is in a heavy recreational area, 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 Spring.

Figure 1: Overview Map of the Rock Springs Area

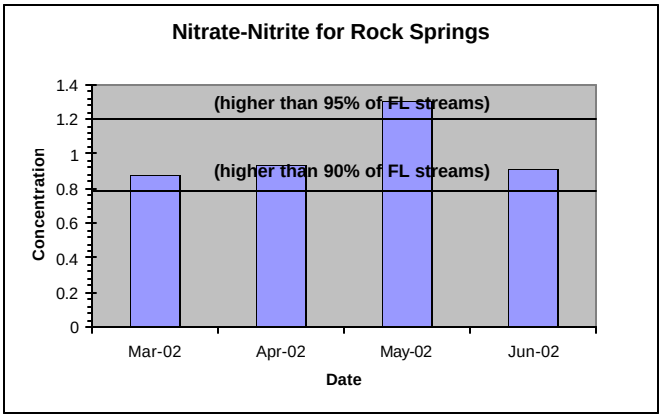


Figure 2: Data Table

Rock Springs			
Sampling Date		4/17/2002	
Macroinvertibrate Parameters		Periphyton Parameters	
SCI	11	% Bacillariophyceae	88.25
SCI Evaluation	Very Poor	% Cyanophyceae	10.7
Number of Taxa	9	% Chlorophyceae	0.53
EPT Index	1	Dominant taxon	Gomphonema
FL Index	2	Percent Dominant taxon	29.3
% Dominant Taxon	46.61	Physical-Chemical Data	
% Diptera	1.69	Habitat Assessment	134
Total number of Chironomidae	2	Specific Conductivity (umhos/cm)	259
% Filter-Feeders	0	Dissolved Oxygen (mg/L)	1.5
Chemistry Data		pH (SU)	7.6
Ammonia (mg/L)	0.01 U	Temperature (deg C)	23.8
Nitrate-Nitrite (mg/L)	1.4 J	Bacteria Parameters	
TKN (mg/L)	0.06 U	*Enterococci* (col/100mL)	12 Q
Total Phosphorus (mg/L)	0.098 A	*Escherichia coli* (col/100mL)	1 KQ
Color (PCU)	5 U	Fecal Coliforms (col/100 mL)	1 KQ
Turbidity (NTU)	0.1	Total Coliforms (col/100mL)	1 KQ

"A"- Average; "J"- Estimated Value; "Q"- Information Only, "U"-Below minimum detection limit; "K" –Actual value less than given value

Figure 3. Nitrate-Nitrite Evaluation



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