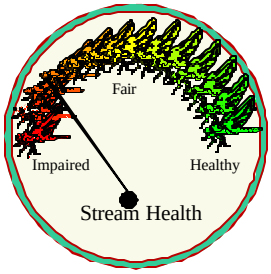


EcoSummary

Volusia Blue Spring

5/19/03



Background

Florida DEP's Division of Recreation and Parks selected Blue Spring, as well as springs from several other state parks, for biological and water quality monitoring. Data from these efforts will be used for documenting conditions within each park and for making resource protection decisions. Blue Spring State Park is located in Volusia County, Florida (Figure 1). Blue Spring Run flows south for approximately 1000 m into the St. Johns River. Blue Spring 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; see Figure 2. Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted.

Results

The nitrate-nitrite concentration (0.78 mg/L) at the sampling site was higher than the values found in 90% of Florida streams, yet had decreased slightly from the October, 2002 sampling (0.9 mg/L). Elevated nitrite-nitrate levels at Blue Spring are related to nitrogen loading in the recharge basin. The Total Kjeldahl nitrogen concentration (0.13 mg/L) was below quantitation limit (Figure 2). The total phosphorus concentration (0.059mg/L) was relatively average for a Florida stream. The overall habitat assessment score (105) was in the sub-optimal range. Lack of substrate availability/diversity were elements contributing to the low score. *Enterococci*, and *Escherichia coli* concentrations complied with the EPA single-sampling guideline values of 61 CFU/100 mL and 235 CFU/100 mL, respectively, for "designed beach area." Fecal and total coliform levels complied with Class III water quality standards. The periphyton community in Blue 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 continued nutrient enrichment in Blue Spring. The stream condition index (SCI) score of 17 for Blue Spring was in the "poor" range.

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

Figure 1: Overview Map of the Blue Springs Area

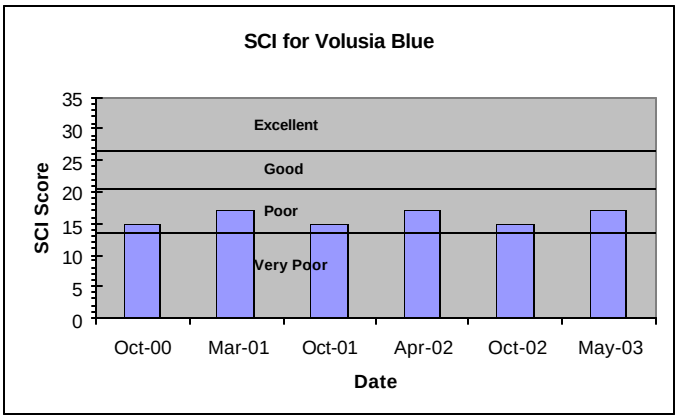


Figure 2: Data Table

Volusia Blue			
Sampling Date		5/19/2003	
Macroinvertibrate Parameters		Periphyton Parameters	
SCI	17	% Bacillariophyceae	84.7
SCI Evaluation	poor	% Cyanophyceae	3.0
Number of Taxa	12	% Chlorophyceae	0
EPT Index	1	Dominant taxon	Fragilariaceae
FL Index	4	Percent Dominant taxon	39.2
% Dominant Taxon	43.4	Physical-Chemical Data	
% Diptera	17.0	Habitat Assessment	105
Total number of Chironomidae	5	Specific Conductivity (umhos/cm)	878
% Filter-Feeders	6.6	Dissolved Oxygen (mg/L)	1.43
Chemistry Data		pH (SU)	7.07
Ammonia (mg/L)	0.01 U	Temperature (deg C)	23.2
Nitrate-Nitrite (mg/L)	0.78	Bacteria Parameters	
TKN (mg/L)	0.13 I	*Enterococci* (col/100mL)	6 BQ
Total Phosphorus (mg/L)	0.069 A	*Escherichia coli* (col/100mL)	4 BQ
Color (PCU)	5 U	Fecal Coliforms (col/100 mL)	1 KQ
Turbidity (NTU)	0.35 A	Total Coliforms (col/100mL)	20 BQ

"U"- Below Detection Limit; "K"- Actual value is known to be less than value given ; "Q"- Information Only; "J"- Estimated Value; "I"-Below Quantitation Limit; "B"-Results based on colony counts outside the acceptable range

Figure 3. SCI Evaluation



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