EcoSummary

De Leon Springs

10/14/03

Background

Florida DEP's Division of Recreation and Parks selected De Leon Springs 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. De Leon Springs State Park is located in Volusia County, Florida; see Figure 1. De Leon Springs flow into Spring Garden Lake. De Leon Springs is a Floridan Aquifer-dominated system and is known for its recreational and aesthetic qualities. Water quality characteristics vary from spring vent to spring vent, so a sampling location in the spring run was selected to document overall effects.

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. Qualitative periphyton sampling was also conducted.

Results

The nitrate-nitrite concentration (0.7 mg/L) at the sampling site was equal to those found in 70% of Florida streams (0.7 mg/L); see Figure 2. Elevated nitrite-nitrate levels in De Leon Springs are related to nitrogen loading in the recharge basin. Ammonia, and total Kjeldal nitrogen concentrations (0.024 mg/L, and 0.46 mg/L respectively) were lower than 80% of Florida streams (0.04 mg/L, and 0.56 mg/L respectively).

Eschericia coli densities complied with the EPA single-sample guideline value of 235 CFU/mL for "designated beach areas" and *Enterococci* failed the sample guideline value of 61 CFU/mL for "designated beach areas". Fecal and total coliform levels were below the Class III water body water standards. The periphyton community in De Leon 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 De Leon Springs.

In conclusion, elevated nitrate-nitrite levels in De Leon Springs continue to be the main stressor associated with a relatively low quality an algal community.

Figure 1: Overview Map of the De Leon Springs Area

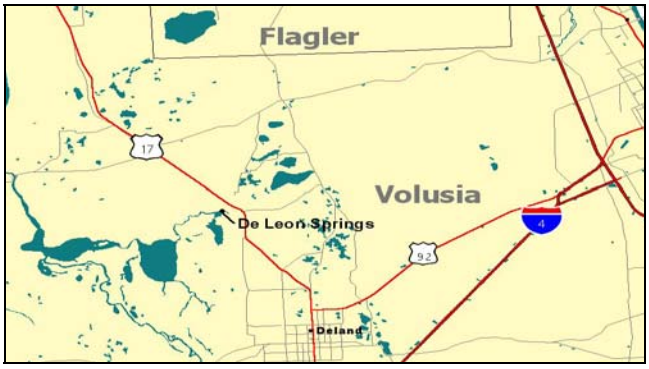
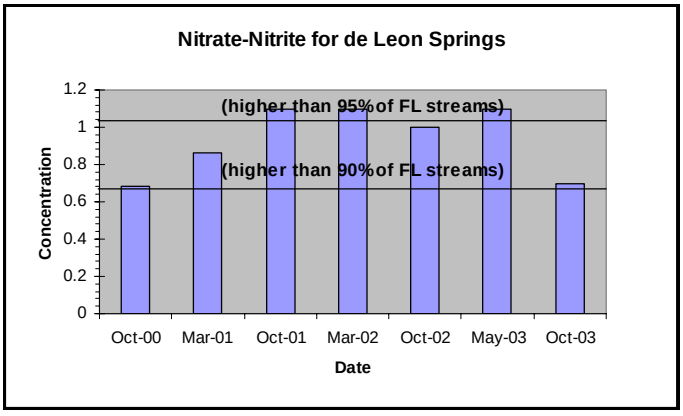


Figure 2: Data Table

deLeon			
Sampling Date		10/14/2003	
Chemistry Data		Periphyton Parameters	
Ammonia (mg/L)	0.024	%Bacillariophyceae	84.1
Nitrate-Nitrite (mg/L)	0.7	%Cyanophyceae	12.7
TKN (mg/L)	0.46 A	%Chlorophyceae	3.25
Total Phosphorus (mg/L)	0.059 I	Dominant taxon	Diadesmis confervacea
Color (PCU)	5 Q	Percent Dominant taxon	51.3
Turbidity (NTU)	0.6 Q	Physical-Chemical Data	
Bacteria Parameters		Habitat Assessment	NA
Enterococci (col/100 mL)	40 Q	Specific Conductivity (umhos/cm)	1050
Escherichia coli (col/100 mL)	4 BQ	Dissolved Oxygen (mg/L)	6.3
Fecal Coliforms (col/100 mL)	6 BQ	pH (SU)	7.5
Total Coliforms (col/100 mL)	80 BQ	Temperature (deg C)	23.8

"B"-Based on colony counts outside acceptable range; "J"- Estimated Value; "Q"- Information Only, "U"-Below minimum detection limit

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