TMDL STUDIES

EcoSummary

DEER PRAIRIE CREEK @ I-75 EAST OF VENICE

November 7, 2001

SUSPECT

BioRecon: A rapid, cost-effective screening mechanism for identification of biological impairment

For samples collected before June 8, 2004
All field and laboratory methods followed FDEP Standard Operating Procedures and met FDEP quality assurance/quality control standards.
For samples collected on or after June 8, 2004
All field and laboratory methods followed FDEP Standard Operating Procedures (SOPs) and met DEP quality assurance/quality control standards.

Purpose



Biological and physicochemical sampling were performed on Deer Prairie Slough in order to gain further information on the biological health of the watershed for use in Florida's Watershed Management and Biocriteria programs. Because this watershed was on the 1998 303(d) list for Total Maximum Daily Loading (TMDL) determination, the results may also be used in determination of TMDL needs and priorities.

Biorecons are based on three measurements of the aquatic invertebrates present in the stream: the total number of different species (Total Taxa), the number of good water quality indicator species (Florida Index) and the total number of Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies) species present. A stream scoring above the threshold value for all three of these measurements is considered healthy. If two of the threshold values are reached, the stream?s health is considered ecologically suspect. If only one or none of the thresholds are reached, an impaired condition is concluded.

Watershed Characteristics

Deer Prairie Creek flows through central Sarasota County. It is a fairly large tributary to the Myakka River, entering the estuary portion of the Myakka just west of Northport. The sampling site was located further upstream east of the I 75 road crossing, where the system is strictly fresh water. At this location, it is a sandy-bottom, tannic stream that was historically channelized, but has exhibited modest recovery of natural sinuousity. The banks of the stream have very little riparian buffer. It is evident that

the rapidly flowing current frequently scours the banks, causing erosion and sediment loading, particularly in the rainy season when the slough is subject to extreme rises in water level. Agriculture is the dominant land use in the basin, primarily cattle pasture and a small amount of citrus. However, a large portion of the watershed is now owned by the state. No permitted domestic or industrial waste discharges occur in the watershed.

Historically, Deer Prairie Creek water chemistry data has demonstrated wide variations in dissolved oxygen (DO) level. The system tends to be intermittent, going dry or nearly so in the dry season, and flooding its banks in the wet. A biological assessment performed at this site by DEP in August, 1999, indicated a healthy macroinvertebrate community despite a DO reading of 3.27 mg/l, well below the State Standard of 5.0 mg/l. Water chemistry data analysed revealed that no elevated nutrient or sediment loadings to the stream were occurring on that date in 1999.

Results

At the time of sampling, the stream was about waist deep. The water was clear, but very tannic, flowing with a velocity of 0.4 m/s. Dissolved oxygen was 7.5 mg/l. Conductivity was 124 umho/cm, pH was 8.0 SU and temperature was 20.8^{o} C. The habitat assessment score, 55, was in the marginal range, due to the lack of instream substrate diversity and cover, lack of well buffered riparian zone and the potential for bank scouring and sediment loading.

The results of the BioRecon indicated that the ecological health of Deer Prairie Creek was "suspect", or potentially impaired. The thresholds for total taxa and total EPT taxa were reached (18 and 5, respectively - thresholds are 18 and 4), but the Florida Index threshold was only 7 (threshold is 10). The FDEP's 1998 303(d) report identified the parameter of concern for Deer Prairie Creek to be dissolved oxygen (DO). The DO reading on the day of sampling was well above the State Standard of 5.0 mg/l. However, the BioRecon illustrated that the biological health of the stream is less than optimal. The lack of instream habitat, scouring and disruption of the riparian zone may account for the suspect macroinvertebrate community.

Suggestions

The 2004 draft verified list for TMDL Group 3 waterbodies did not include any impaired parameters for Deer Prairie Creek. However, t he hydrology of Deer Prairie Creek has been altered drastically by channelization. Bank erosion and sediment loading are severe problems. Since much of the upstream watershed is now owned by public agencies, much opportunity for restoration activities that restore hydrology and riparian buffer zone exists.

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