TMDL STUDIES

EcoSummary

Itchepackesassa Creek downstream of Kraft Rd bridge

February 7, 2002

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



A biological assessment was performed on Itchepackesassa Creek 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 is on the State of Florida's Impaired Water Rule's Verified List for Total Maximum Daily Loading (TMDL) development, the results may also be used in determination of TMDL needs and priorities. The verified parameters of impairment are dissolved oxygen, and total and fecal coliforms. Biological methods are particularly useful in order to ascertain if low DO levels are indicative of natural conditions. If the aquatic community is not impaired, it may be concluded that low DO levels do not adversely effect the health of the system.

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

Itchepackasassa Creek flows through northeastern Hillsborough County. It is a small tributary

to Blackwater Creek which continues flowing to the Hillsborough River, joining the River just east of the Hillsborough River State Park. Its upper reaches drain the area around the City of Lakeland. The predominant landuse in the basin is cattle grazing, but in the headwaters industrial. commercial and urban landuses prevail. Hillsborough County acquired the major portion of the watershed downstream of Lakeland in the mid 1990s, and continues to lease the land to cattle ranchers. Itchepackesassa Creek was channelized many years ago for drainage purposes, and is beginning to return to a more natural streambed and riparian zone in some locations. There are two discharges into the headwaters in Lakeland: CSX Transportation discharges indirectly through Winston Creek, and Florida Juice discharges from October to May directly into the creek. Additionally, Plant City Waste Water Treatment Plant discharges to East Canal, which flows into Itchepackesassa Creek downstream of Knights Griffin Road.

The sampling location is in the headwaters of Itchepackesassa Creek, downstream from the Kraft Road bridge in the City of Lakeland,. This is also directly downstream of Florida Citrus, Inc.'s effluent, although the facility wasn't discharging at the time of sampling. At this location, the creek is channelized, with no evidence of any recovery of natural sinuosity. The water is very muddy, brown and sluggish. The riparian zone is marginally sufficient to provide a natural buffer to the stream, and consists of native hardwoods and a number of exotic and opportunistic shrubs and plants. Riparian zone disturbance is evident However, the straightening of the channel results in frequent flooding during the rainy season, causing erosion of the banks and sediment loading into the water channel.

Results

At the time of sampling, the stream was about 0.3 m deep. The habitat assessment score was 74 out of 160, which places it in the marginal category for habitat characterization. The marginal score was due largely to the fact that there was slow velocity, heavy siltation, and reduced in-stream habitat for aquatic invertebrates because of artificial channelization. Dissolved oxygen was 2.45 mg/l, conductivity was 328 umho/cm, pH was 6.82 SU and temperature was 18.57 deg. C.

The results of the biorecon indicated that Itchepackesassa Creek is impaired. Only one parameter exceeded its threshold value. Total taxa (19) exceeded the threshold of 18 but there were no EPT taxa (threshold is 4) and the Florida Index taxa was only 4 (threshold is 10). Bioassessments performed at other locations in the Itchepackesassa watershed exhibited healthier results. These sites were further downstream from Lakeland where natural conditions have had some opportunity to return after historical channelization. These sites also have stable riparian buffer zones, faster water velocity and higher dissolved oxygen

Significance

The FDEP's Impaired Waters Rule has identified dissolved oxygen as a parameter of concern for Itchepackesassa Creek. The DO reading on the day of sampling was well below the State Standard of 5.0 mg/l. Also, biological sampling at this site indicates that at this location the invertebrate community is impaired. Hence, Itchepackasassa Creek does not maintain a healthty, well-balanced biological population in its headwaters.

Suggestions

The hydrology and natural habitat attributes of Itchepackesassa Creek have been altered drastically by channelization. Since Hillsborough County bought the majority of the watershed acreage outside of Lakeland, restoration projects have been initiated. Best Management Practices (BMPs) for cattle ranching are in place: the cattle are largely fenced away from the creek and a healthy buffer zone is

maintained on both sides. However, there have been no improvements to the highly urbanized and industrial headwaters. Restorative efforts should be focused in these headwater areas, and include Best Management Practices for urban stormwater treatment, urban development and construction, and point source discharge compliance since they appear to be the major contributors of impairment.

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