EcoSummary

Itchepackasassa Ck @ CR 582
October 25, 2002

TMDL STUDIES

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



Biorecons, short for Bioreconnaissance, were performed in 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 FDEP's Group 2 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.

Previous assessments conducted on 8/06/96 and 1/31/02 are included in this report.

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. Hillsborough County acquired the major portion of the watershed 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 site is located upstream of the Knights Griffin Rd (CR 582) bridge crossing. At this location, it is a sandy-bottomed, silty stream that is beginning to retain its natural sinuosity after historical channelization. The riparian zone, which consists of cypress floodplain, is sufficient to provide a natural buffer to the stream. 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 0.8 m deep. The habitat assessment score was 103 out of 160, which places it in the suboptimal category for habitat characterization. The suboptimal score was due largely to the fact that there was reduced in-stream habitat for aquatic invertebrates because of artificial channelization. Dissolved oxygen was 6.26 mg/l, conductivity was 185 umho/cm, pH was 7.26 SU and temperature was 24.13 deg. C.

The results of the biorecon indicated that Itchepackesassa Creek was potentially impaired, or "suspect" at the time of sampling. Total taxa (21) exceeded the threshold of 18 and the EPT taxa was 7 (threshold is 4), but the Florida Index taxa was only 9 (threshold is 10). Results of previous bioassessments under the same habitat conditions on 8/06/96 and 1/31/02 suggest that the impairment is minimal. A Stream Condition Index (SCI) performed on 8/06/04 scored in the good category. An SCI uses a more intensive collecting and analytical method than a Biorecon. Also, all 3 biorecon parameters exceeded their thresholds during a biorecon conducted on 1/31/04. These results suggest that Itchepackesassa Creek may not be as ecologically healthy as other more pristine waterbodies in the Southwest District, but the impairment is not severe and may be due more to lack of in-stream habitat than water quality issues.

Suggestions

The FDEP's Impaired Waters Rule identified dissolved oxygen as a parameter of concern for Itchepackesassa Creek. The DO reading on the day of sampling was above the State Standard of 5.0 mg/l. Also, biological sampling at this site does not indicate any severe oxygen stress.

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, 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. The water quality of the creek is more likely to be impaired by runoff from the City of Lakeland, and that is where restorative efforts should be focussed.

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Published by the Florida Department of Environmental Protection
Tallahassee, Florida
For more information on the DEP Bioassessment programs, please visit
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