FLORIDA AMBIENT

EcoSummary

PASS

Seminole Hills Branch at Sunbelt Mine silt curtain

October 11, 2006

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 bioassessment was performed on the biota and wildlife habitat at this Seminole Hills Branch site as a background for the Steelfield Landfill on Otter Creek . The unnamed Branch is referred to as Seminole Hills Branch in this report for descriptive purposes (named after the nearby abandoned Seminole Hills community). The Seminole Hills Branch site bioassessment was performed on a first order tributary just down stream of the Otter Creek test site. This background site is adjacent to Sunbelt sand mine next to the Steelfield Landfill. These two bioassessments were technical support requested by the FDEP Northwest District's Waste Management Cleanup Section. A January 5, 2006 Remedial Action Plan prepared for the Steelfield Road Landfill by their consultant indicated that Otter Creek is matted with red flocculent organic matter The consultants concluded that Otter Creek naturally exceeds the 1 mg/l iron surface water standard and target cleanup limit.

Watershed Characteristics

Seminole Hills Branch at the bioassessment site (STORET 32020163) is located approximately 5 miles northwest of the West Bay community in Bay County (Latitude N30 degrees 22 minutes 22.6 seconds; Longitude W85 degrees 55

minutes 20.8). Seminole Hills Branch flows to Otter Creek and the Choctawhatchee River before emptying into Choctawhatchee Bay. Seminole Hills Branch is designated Class III waters for recreation and maintenance of a healthy, well-balanced aquatic community. The watershed drains the Gulf Coast Flatwoods of subecoregion 75a. It is a first order stream draining silviculture, wetland areas and a new sand mining operation. The headwaters originate only a few meters upstream to the southwest of the sample site; however a man-made channel from the southeast connects it with Otter Creek. There was evidence the sample reach was altered historically for a mill site serving the abandoned Seminole Hills community. Many heartwood pine posts possibly used to support a water transport flume were still embedded in the stream bed along much of the channel.

Results

The BioRecon indicated a healthy biological community. The biological indicators passed thresholds established for a healthy aquatic wildlife community:

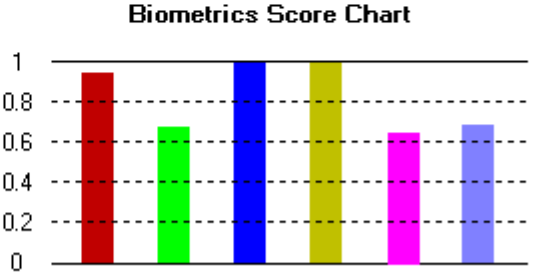
Biometrics	Metric Score
# TOTAL TAXA	0.94
# EPHEMEROPTERA TAXA	0.67
# TRICHOPTERA TAXA	1
# LONG-LIVED TAXA	1
# CLINGER TAXA	0.65
# SENSITIVE TAXA	0.68
TOTAL METRIC SCORE :	4.94
/ Correction Factor :	0.6
= BIORECON SCORE :	8

(•) Pass 6 - 10
( ) Fail 0 - 5

SEMINOLE HILLS BRANCH @ SILT CURTAIN

BioRegion : Panhandle West

Sample Date : Oct 11, 2006



This Seminole Hills Branch site had a diverse and productive fish and wildlife community. This background site for Otter Creek had almost three times the taxa (47), mainly clean water indicators (Florida Index 30) than the Steelfield Landfill site. About half the background's total taxa (22) were mayflies (8), stoneflies (3), and caddisflies (11) known as EPT (Ephemeroptera, Plecoptera, Trichoptera) . The EPT (mayflies, stoneflies, and caddisflies) are the basis for a well-balanced stream community. Stoneflies, the most important clean water indicator, were co-dominant with the mayfly, Macafferterium . The dominant stonefly was Leuctra , which is typical of low order Panhandle streams during the fall, as it shreds and feeds on hardwood leaves. Two predators, species of the stonefly Acroneuria were abundant. Darters, shiners, and salamanders were common.

The Habitat Assessment rated at the low end of optimal (72%). Substrate Availability, Water Velocity, and Left bank Riparian Buffer Zone Width rated optimal. Substrate Diversity, Habitat Smothering, Bank Stability and Riparian Zone Vegetation Quality rated suboptimal. Artificial Channelization ("ditched historically") and Right bank Riparian Buffer Zone Width (7-meters allowed road sediment runoff at the turbidity curtain) rated a marginal score.

Iron/sulfur bacteria and odor were absent in the Seminole Hills Branch sediment. This was quite a contrast to sediments and substrates in Otter Creek at the landfill, which had over-abundant iron/sulfur bacteria with red flocculent organic matter and anaerobic/hydrogen sulfide odor. Water odor in Seminole Hills Branch was normal with no sheen of iron/sulfur bacteria on the water. The iron concentration in the water at Seminole Branch was 0.193 mg/l, which was below the Florida Administrative Code 62-302.530(39) standard of 1 mg/l. Periphyton was rare. The dissolved oxygen (DO) concentration was 6.44 mg/l (4.06 mg/l Otter Creek). The percent DO concentration was 73% (46% Otter Creek). Water temperature was 21.97 degrees centigrade similar to 21.78 degrees at Otter Creek. Conductivity was 61 umho/cm at Seminole Hills Branch, a little higher than the 50 or less umho/cm of the typical of the area's sand and gravel streams. The conductivity was slightly elevated probably because it was receiving some Otter Creek water from a man-made connecting channel upstream (108 umho/cm at Otter Creek).

Conclusions

This Seminole Hills Branch site met Class III State Water Quality Standards 62-302 for recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife. Clean ground water quality at the site and re-growth of the riparian forest enhanced the stream's fish/wildlife diversity and productivity. However, if the sand mining operation does not maintain a greater than 18-meter riparian buffer zone along Seminole Hills Branch and mining alters groundwater flow and volume, stream health could be affected in the future. There is also potential for the adjacent landfill to expand into the mined pit. A common occurrence in the Panhandle is to fill mined areas with solid waste. The area's acid sand and gravel soils are very porous and unfortunately readily discharge landfill leachate to surface waters if not contained with sufficient liners.

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For more information on the DEP Bioassessment programs, please visit
our web site at http://www.dep.state.fl.us/water/bioassess

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