FLORIDA AMBIENT

EcoSummary

Pine Forest Lane Branch above Tindle Enterprises Sand/Clay Mine

February 5, 2008

PASS

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.

Introduction



A BioRecon was conducted at this site as a background in order to assess the impacts of the Tindle Enterprises clay/sand mine operation on the biota and wildlife habitat in Pine Forest Lane Branch (un-named stream on the USGS map

- name chosen because Pine Forest Lane was the only mapped landmark). This bioassessment was in technical support of an enforcement case (Consent Order OGC #08-0823-66-DF) by the FDEP Northwest District Submerged Lands Environmental Resource Permitting (SLERP) program.

Watershed Characteristics

The bioassessment site at Pine Forest Lane Branch (Lat 30 degrees 36 minutes 16.4 seconds Long -86 degrees 03 minutes 25.9 seconds) was located less than 7 miles southeast of De Funiak Springs in Walton County, north of Rock Hill Road. The sample reach (STORET 32020250) was directly above a gully discharging turbid waters and sediment runoff from a clay/sand mine dug into a hillside. The Pine Forest Lane Branch watershed drains hilly land of subecoregion 65f (Southern Pine Plains and Hills). This second order stream flows to Mill Creek, Bruce Creek, and Choctawhatchee River before entering Choctawhatchee Bay. Land use in the Pine Forest Lane Branch watershed according to 1995 Northwest Florida Water Management District (NWFWMD) maps was Pine plantations, shrub and brushland, upland pine forest, mixed hardwood and pine

forest, wetland mixed forest, freshwater marshes, extractive (mining), commercial and services, electricity transmission lines, roads, and low density residential areas.

Results

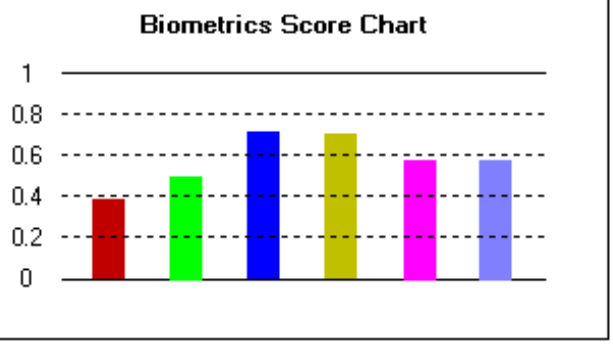
The bioassessment passed the BioRecon Score with a six out of 10 score. However, the site failed four of the six biological indicator thresholds established for a healthy aquatic wildlife community:

Biometrics	Metric Score
# TOTAL TAXA	0.39
# EPHEMEROPTERA TAXA	0.5
# TRICHOPTERA TAXA	0.71
# LONG-LIVED TAXA	0.7
# CLINGER TAXA	0.58
# SENSITIVE TAXA	0.58
TOTAL METRIC SCORE :	3.46
/ Correction Factor :	0.6
= BIORECON SCORE :	6

Pass 6 - 10
Fail 0 - 5

PINE FOREST LANE BRANCH ABV TINDLE ENTERPRISES CLAY MINE

BioRegion : Panhandle West
Sample Date : Feb 05, 2008



The benthic macroinvertebrate community indicated some affects from anthropogenic sources in the watershed. However, the community was much more diverse and productive than Pine Forest Lane Branch below the gully discharging from the Tindle Enterprises mining operation. For a comparison, here are three local small streams East Fork Magnolia Branch (33010033) located about 3 miles to the south (206 degrees), White Branch 4.8 miles to the west (272 degrees), and Sourwood Branch 8.4 miles to the southwest (272 degrees):

Site	Total Taxa	Florida Index	EPT
Pine Forest Branch Upstream	29	15	13
Pine Forest Branch downstream	10	6	5
East Fork Magnolia Branch	53	34	25
White Branch	46	27	23
Sourwood Branch	41	28	21

The NWFWMD land use maps indicate mining, commercial and services, and silviculture as major potential non point source possibly affecting upper Pine Forest Branch. In addition to the Tindle

Enterprises mine located adjacent and above this site, another clay/sand mine was above and to the east of this sample reach. Commercial and services land use was in the headwaters while pine silviculture plantation encompassed much of the watershed.

The Habitat Assessment for this Pine Forest Branch site above the gully discharging mine runoff rated optimal (85%). Substrate Availability, Water Velocity, Habitat Smothering, Artificial Channelization, Bank Stability, Riparian Buffer Zone Width, and Riparian Zone Vegetation Quality rated optimal. Only Substrate Diversity rated suboptimal.

The dissolved oxygen (DO) concentration was 8.73 mg/l with the percentage DO saturation at 88. Both were comparable to the downstream test site. Water temperature was 15.7 degrees centigrade, also similar to the test site, as was the pH at 4.15 standard units.

Sediment and water oils were absent. Sediments and water odors were normal. The water was clear. Iron/sulfur bacteria were absent. Periphyton was common and macrophytes absent. Fish were common with many schools of shiners observed. Quite a few salamanders and frogs were present. The rainfall recorded at Eglin Air Force Base from 2005 to 2008 has been below normal. Annual 2008 rainfall was slightly below normal to date. Although the below normal rainfall has reduced stream flow, it appeared excavation such as mining and possibly ditching may have contributed to a lowered water table in the Pine Forest Branch watershed.

Conclusions

This Pine Forest Lane Branch site above Tindle Enterprises discharge gully 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. Although this reach had a passing score, it did not meet four of six biometrics. This borderline score indicated possible anthropogenic input. This would include other potential storm water runoff from the Tindle mining operation above this sample reach since only 200 meters of Pine Forest Lane Branch above the mine discharge gully was inspected. In addition to other potential nonpoint source pollution from another upstream mine pit, watershed silviculture activities, and commercial/services land uses in the headwaters, a drop in the watershed's water table from excavation would also affect the stream wildlife community. Another undocumented potential problem might be pesticide spraying. No spray signs posted by a landowner were observed in the watershed.

Maintaining a riparian buffer zone width of greater than 18 meters along the stream, protecting it from nonpoint source pollution, restoring geologic contour elevations, and best management practices for pesticide use should restore Pine Forest Lane Branch to biological conditions found in other local streams such as East Fork Magnolia Branch.

This station (STORET 32020250) should be biomonitored with the Stream Condition Index (SCI) method by Tindle Enterprises as a background site to document their downstream stream restoration activities. SCI biomonitoring should continue until the biometrics of Pine Forest Branch below their clay/sand mine matches this upstream reach.

Pine Forest Lane Branch above Tindle Enterprises Sand/Clay Mine

