

# EcoSummary

BioRecon Report



## Garnier Creek in Okaloosa County north of Fort Walton Beach August 4, 1998

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

### Introduction

A BioRecon was performed at this site as part of a TMDL study. This bioassessment was used to determine the health of Garnier Creek's biota and habitats. Potential sources impacting the creek include silviculture, weapons testing and wastewater treatment plant spray field.

### Basin Characteristics

Garnier Creek is located in Okaloosa County north of Fort Walton Beach, and flows to Choctawhatchee Bay via Garnier Bayou. This subcoregion 75A watershed drains predominantly silviculture lands on Eglin Air Base's weapons test range. The Eglin's wastewater treatment plant spray field is located in the drainage. The watershed's soils are typically sandy and well drained. Coliform bacteria was the nonpoint pollution concern which placed Garniers Creek on the 303(d) list for TMDL study. The purpose of the TMDL is to determine the pollution reduction needed to restore the system to a condition suitable for its designated use. Garnier Creek is designated Class III waters for recreation and maintenance of a healthy, well-balanced aquatic community.



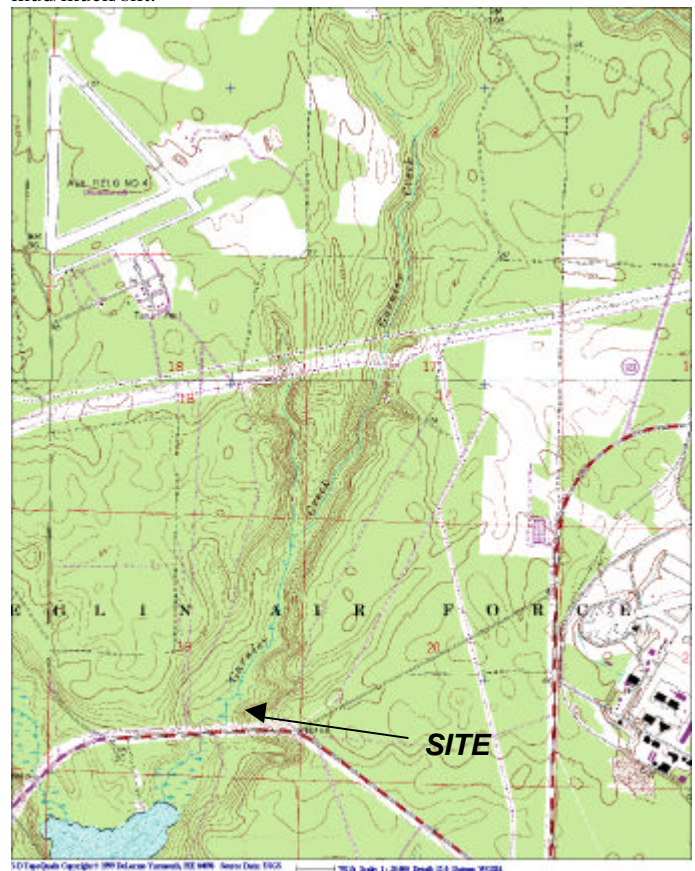
### Results and Discussion

Macroinvertebrate communities were sampled on 08/04/98 from in-stream habitats by the FDEP BioRecon method above State Road 189. The sample reach was above an area dredged by FDOT. The BioRecon indicated impairment to the Garniers Creek biological community. All 3 biological indicators failed to meet thresholds established for healthy aquatic ecosystems:

Biometrics	Value	Thresholds
Taxa Richness	21	>24
Florida Index	13	>22
EPT	5	>17

Total coliform bacteria were within the water quality standard of 2,400 colonies/100 ml however, appeared elevated (1180 colonies/100 ml). Nitrite-nitrate concentrations were elevated (0.70 mg/l). The sediments had an anaerobic odor with an iron/sulfur bacteria growth. This area experienced a record drought during the May/June period and a hot July with scattered thundershowers. The habitat assessment

of the site was 64% of the % similarity to the reference score. A score of 65% is an interim biometric threshold. Substrate availability was suboptimal /marginal, water velocity suboptimal (probably due to historic conversion of the watershed's riparian zone wetlands to pine plantations and culvert installation downstream), and habitat smothering rated poor from 83% coverage of habitats with mud/muck/silt.



### Conclusions

Physical parameters such as habitat smothering with fine organic matter appear due to upstream anthropogenic changes. Elevated coliform bacteria and nitrite-nitrate sources might be associated with the near by wastewater sprayfield. Typically the area's quartz sand soils are not conducive to nutrient removal before reaching the water table. Rats were noted in the trees above the stream while sampling. The rats might be associated with the wastewater facility, as we have never observed them while monitoring hundreds of stream sites. Possibly, rat droppings could be a contributor to the elevated total coliform bacteria. It is recommended that Garnier Creek remain on the 303(d) list. For more information, contact Donald Ray, FDEP Northwest District, 160 Governmental Center, Pensacola, FL 32501 (850) 595-8300 x1126 or SC 695-8300