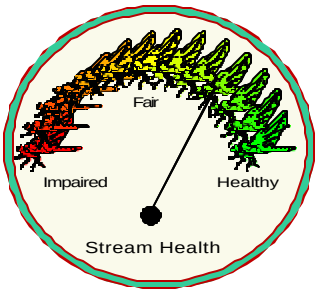
EcoSummary



BioRecon Report

Swamp Creek
@ Hwy 159
4/27/99

BioReconnaissance Report (BioRecon): A rapid, cost effective screening mechanism for identification of biological impairment.

Purpose and Background

Swamp Creek, located in Gadsden County, is a tributary of the Little River. Lying within the Tifton Upland/ Tallahassee Hills Subecoregion (65h), the land is predominately a combination of hardwood and pine forest, mixed with longleaf pine and xerophytic oaks. Land use within the basin consists of cropland and pastures.

Swamp Creek has been placed on the 303(d) list for violations of turbidity, coliforms, total suspended solids (TSS) and nutrient levels. Waterbodies on this list are required by EPA to have a Total Maximum Daily Load (TMDL) study performed on them. The purpose of the TMDL is to determine the amount of pollution reduction needed to restore the system to a condition suitable for its designated use. In this case, the designated use is for recreation and maintenance of a healthy, well-balanced aquatic community.

DEP's Environmental Assessment Section was requested to assess the status of selected waterbodies on the TMDL list that were placed on the list with limited data. The data available for these selected waterbodies consisted of less than 10 observations in the Storet database, somewhat dated, pre-1990 information, or qualitative non-point source survey data only.

Results

Physical/chemical parameters and nutrients were sampled at Swamp Creek in April of 1999. Macroinvertebrate communities were sampled using 4 discrete dip net sweeps (Bio-Recon). The sample was field picked, and brought back to the laboratory for identification under a dissecting microscope. Three metrics; total taxa richness, Florida Index, and total EPT (Ephemeroptera, Plecoptera, and Trichoptera; larval mayflies, stoneflies, and caddisflies), were calculated and compared to existing western Panhandle thresholds (24 total taxa, 22 Florida Index and 11 EPT taxa) to determine the community's health. A Bio-Recon is a screening tool that assesses freshwater macroinvertebrate communities based on geographic thresholds. Swamp Creek exceeded the threshold for number of taxa (32) and the Florida Index (22), but was 1 point shy of passing the EPT Index (10). Because two of the three criteria were exceeded and the third was only one taxa under the threshold, this site is considered "healthy".

Habitat assessment results indicate that the site is in the high "suboptimal" range. Water velocity (0.1 m/s) was at the bottom of the "suboptimal" category. Substrate diversity was "marginal" and approximately 30% of habitat was affected by sand smothering.

Dissolved oxygen concentrations (6.78 mg/L) exceeded the Class III water quality standard of 5.0 mg/L. Total Kjeldahl nitrogen (0.65 mg/L) and ammonia (0.055 mg/L) levels were also in the acceptable range (below 50% of other Florida streams). Nitrite-nitrate (0.16 mg/L) and total phosphorus levels (0.26 mg/L) were slightly elevated, exceeding those found in 65% of other state streams. Total suspended solids were also slightly elevated at 14.4 mg/L.

Turbidity levels were higher than expected (29 NTU). While this is not a violation of state standards (29 NTU above background), it is higher than 95% of other Florida streams. However, Swamp Creek was shallower and less turbid at Hwy. 27 in Georgia where Water Quality Assessment Section staff conducted flow measurements. Fecal (94 colonies/100 ml) and total (2000 colonies/100 ml) coliform counts were below the Class III standard of 800 colonies/100 ml and 2400 colonies/100 ml, respectively.

Suggestions

Swamp Creek passed two of the three biological parameters, and was only 1 point shy of passing the EPT Index, indicating a healthy aquatic macroinvertebrate community. Habitat at the site was in the high "suboptimal" range. Dissolved oxygen, fecal and total coliforms complied with Class III standards. However, nitrite-nitrate and total phosphorus levels exceeded 65% of other Florida streams. Total suspended solids were also slightly elevated. Turbidity levels, though not in violation of state standards, were higher than those found in 95% of other Florida streams. Due to elevated levels of nitrite-nitrate, phosphorus, and turbidity, it is recommended that Swamp Creek remain on the 303(d) list.

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Figure 1: Overview Map of Swamp Creek @ 159

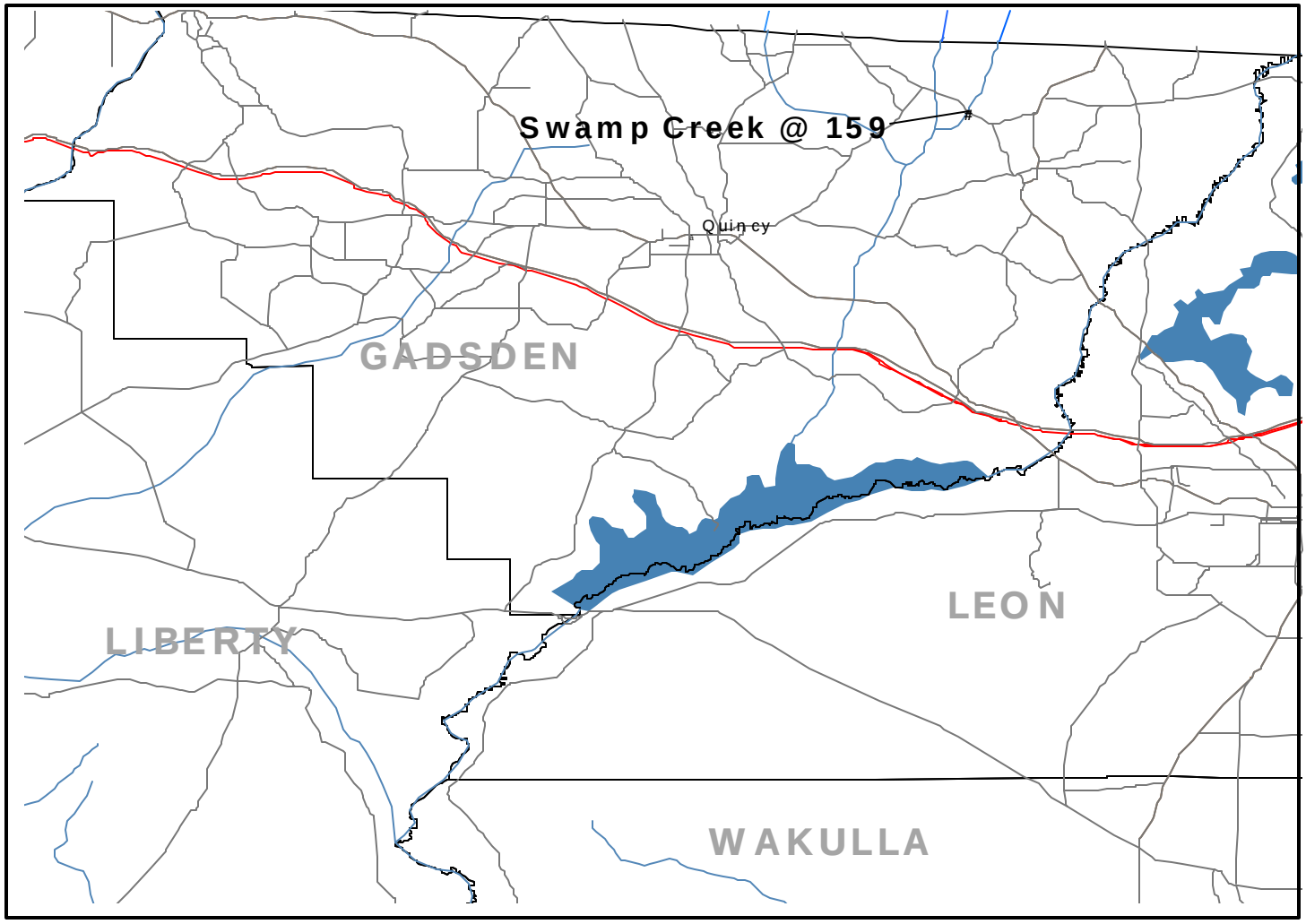


Figure 2: Data for Selected Parameters

Station	Date	# Taxa	Florida index	EPT	pH (Std Units)	Temp (C)	NH_3 (mg/L)	NOx (mg/L)	TKN (mg/L)	TP (mg/L)	Fecal coliforms (col/100 ml)	Total coliforms (col/100 ml)	TSS (mg/L)	Turbidity (NTU)
Swamp Creek @ 159	04/27/99	32	22	10	6.9	21.3	0.055	0.16	0.65	0.26	94	2000	14.4	29

Storet Code	Date	Ave Depth (ft)	Width (ft)	Area (ft^2)	Velocity (ft/s)	Flow (cfs)	DO (mg/L)	Cond. ($umhos/cm^2$)
22020082	04/27/99	1.07	18.4	19.64	0.322	6.317	6.78	53.6

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