

Beatty Bayou, Lynn Haven, Florida

Trophic State Analysis & Hydrological Modeling

Start / End Dates: 2004

Key Project Personnel Involved in this Project:

S. McGlynn, PhD
S. Rupp
K McGlynn, BA
A. Kubes

Project 2

Brief Description of Work Performed:

Beatty Bayou was being evaluated for restoration, including sediment removal, which was hoped to improve water quality and habitat. Parts of Beatty Bayou were very shallow. Distinct sand bars had developed at the mouth and terminus of the Beatty Bayou. The water was less than 0.5 meters deep at the mouth of Beatty Bayou. Algal mats were growing on the shallow sediments, *Lyngbya spp.* These algal mats were breaking loose in small 5 – 10 cm clumps, and were floating down the Bayou towards the Bay.



Beatty Bayou was monitored and modeled by McGlynn Labs. The following parameters were sampled and analyzed: Physical-Chemical Parameters (depth, stage, secchi, temperature, turbidity, dissolved oxygen, pH and specific conductivity); Laboratory Parameters (turbidity, true color, TSS, TDS, ortho-phosphorus, total phosphorus, nitrite, nitrate, ammonia, total nitrogen, chlorophyll, pheophytin, corrected chlorophyll, metals, petroleum

hydrocarbons, and bacteria). Sediments were sampled and analyzed for: sediment type/grain size; moisture content of sediment; organic content of sediment; inorganic content of sediment; metals, petroleum hydrocarbons.

Hydrological models showed that physical dynamics account for zones of high sediment deposition at both the head and mouth of Beatty Bayou where sediment removal would be beneficial for both ecological and recreational concerns. The middle portion of Beatty Bayou should also be considered a zone of deposition. Overall there was not enough flow through Beatty Bayou to scour and keep the passes open. Sediment removal was recommended. Thus the major problem or impairment of Beatty Bayou was found to be due to sedimentation build up and nutrient enrichment, not toxins. It was recommended that they also reduce nutrient inputs through reduced usage of fertilizers, increased septic tank maintenance, and erosion control in the watershed as well as shoreline protection (buffers).