

Baldwin County Erosion and Sediment Transport: The Horse is Out of the Barn, but Can We Put Him Back in?

Land-use change can have tremendous deleterious impacts on water quality and biological habitat of streams. This is particularly true in parts of Baldwin County where topographic relief and highly erodible soils are subjected to disturbances related to residential and commercial development. Parts of Baldwin County are undergoing widespread transitions in land use from forested and agricultural to commercial and residential.

The Geological Survey of Alabama in cooperation with local, state, and federal agencies investigated impacts of development on sediment loads in the D'Olive and Tiawasee Creek watersheds in the Daphne area of west-central Baldwin County and Magnolia River in the Foley area of southwestern Baldwin County. Ten sites in the D'Olive-Tiawasee Creek watershed and 12 sites in the Magnolia River watershed were investigated.

Sediment loads in D'Olive and Tiawasee Creeks are primarily composed of bed sediment. Tiawasee Creek had the largest suspended sediment load (835 tons/yr). However, when the loads were normalized with respect to unit watershed area, an unnamed tributary to D'Olive Creek, D'Olive Creek, and Joe's Branch had the largest suspended sediment loads (352, 331, and 330 tons/mi²/yr, respectively). D'Olive Creek had the largest bed sediment load (3,097 tons/yr) due to massive erosion of the stream channel upstream from the monitored site. After normalization of bed sediment loads, D'Olive Creek had the largest load (1,656 tons/mi²/yr). The largest total annual sediment load (3,716 tons/yr) was estimated for D'Olive Creek. When total sediment loads were normalized with respect to watershed area, the largest loads were estimated for D'Olive Creek (1,987 tons/mi²/yr).

Magnolia River is virtually undeveloped when compared to the D'Olive-Tiawasee Creek watershed and is currently involved in being considered for "Outstanding Water" designation. Although data collection was ongoing as this abstract was submitted, preliminary data indicate that sediment loads are an order of magnitude less than those observed in the D'Olive-Tiawasee Creek watershed. Local, state, and federal agencies and stakeholders have joined to form a working group in the D'Olive-Tiawasee Creek watershed to examine solutions for the erosion problems in the effected watersheds. Work will soon begin on a watershed plan to remediate current problems and to limit or prevent future damage to water bodies and habitat. The city of Magnolia Springs in cooperation with the city of Foley and local stakeholders are working to protect Magnolia River from problems that have occurred in other watersheds as a result of economic development.

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