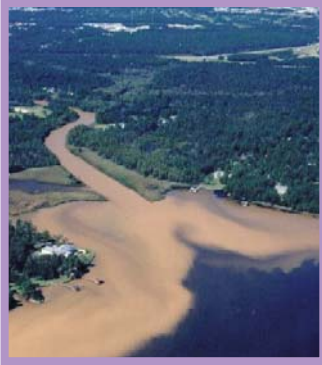


Erosion

DOG RIVER – A CLASSIC EROSION PROBLEM



Confluence of Moore Creek and Dog River
Photo courtesy of dogriver.southalabama.edu

Old-timers tell stories of a pristine Dog River with white sandbars and deep reddish colored water. After a rain, modern day Dog River resembles chocolate milk sprinkled with floating trash and laden with invisible bacteria. The recent dredging of a portion of the river to remove accumulated sediment from the river has

been a costly and controversial project. What happened to Mobile's river? To answer this question we must understand how a river works, and how Mobile's development affects those natural processes.

All of the water in a river comes from its watershed, the land area that it drains. In the case of Dog River, the watershed is about 95 square miles. The upper parts of a river are small streams fed by groundwater and runoff from the land's surface. Whenever it rains, some water seeps into the ground to become part of the water table, and some runs off into the tributaries. Abundant vegetation forces runoff water to move more slowly, so more water seeps into the ground. Naturally vegetated areas like wetlands act like huge sponges that soak up water quickly and release it slowly over time. Vegetation also helps to clean water by filtering out sediment, trash, and removing chemicals like fertilizers. Large intact wetlands are valuable, but wetland strips along the sides of streams are also important.

Wragg Swamp, a huge bottomland hardwood forest, historically absorbed the flow from tributaries and then released it slowly into Eslava, Halls Mill, and Rabbit Creeks. That swamp was the reason the water used to be so reddish in color yet so clear. When the malls and I-65 were built, most of Wragg Swamp was drained, signaling the end of those natural filters and beautiful water. In addition, many streamside wetlands have been lost and Mobile's growth continues to replace vegetated surfaces with impermeable roads, houses, parking lots, and buildings. When it rains, the water hitting them cannot penetrate into the soil to feed the groundwater. Instead, it runs off quickly into man-made ditches carrying water rapidly to the nearest stream.

In the headwaters, where the gradient is steep, water runs faster and has more erosive power. Fast moving water can transport larger particles than slow moving water. Near the mouth of a river, the slope is no longer

capable of carrying the material it transported in its upper reaches. Deposition of sediment occurs naturally in the lower part of a stream.

In the Dog River watershed, the steepest tributaries are in west Mobile where development is rampant. Land clearance strips away protective vegetation so that during rains, ditches and streams carry soil away from west Mobile and deposit it when the water eventually slows down in the lower portion of Dog River. This includes anything washing from the streets and parking lots.

The soil carried by stormwater is mostly sand, silt, and clay. Streams carry very small particles of silt and clay farther downstream. Clay, because it stays suspended so long, is carried all the way into the wide part of Dog River where much of the clay settles out, causing the river to get shallow. Clay deposition is made worse by the salt-water that comes in from the bay causing the clay particles to clump together and settle out in larger particles.

It is important to understand that the filling in of an estuary like Dog River is a natural process. Urbanization of the watershed has accelerated the natural filling process by exposing land, increasing runoff and the speed of stream flow. To swim in Dog River today is also to accept the fact that the water has come from gutters throughout the watershed. Each rainfall washes cigarette butts, beverage containers, automobile fluids, yard waste, fertilizer, pesticide, sewage, and sediment into the river.

Wetlands and upland fringes along streams are important buffer zones between developed areas and the water itself. Voluntary conservation easements, establishing wetlands in front of bulkheads, and leaving streamside areas as "wild parks" in new subdivisions are wise investments for future water quality. We can also reduce runoff by choosing permeable surfaces over impermeable ones. The City of Mobile's landscape ordinance requiring a percentage of any new development to be landscaped rather than paved is a positive step in this direction. Wide grassy swales slow and filter water better than rock lined straight-sided ditches. Developers should make every effort to clear the minimal amount of land necessary for construction, to stage large projects so that less land is exposed to erosion, and to implement best management practices to reduce sediment runoff.

Dog River is not the only area stream with erosion problems. Many Mobile Bay tributaries are subject to increased development, habitat removal, and erosion problems. The Mobile Bay NEP encourages the development of watershed groups and management plans to address the many pressures on area waterways.

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FAST FACTS

- 500 BC - forward – Greek coastal cities became landlocked after deforestation, which increased soil erosion. The siltation filled in the bays and mouths of rivers. One river located in Southwestern Greece, the *Maender*, became so silted that its twists and turns came to represent a river wandering or *meandering*
- 1388 AD -- English Parliament passed an act forbidding the throwing of filth and garbage into ditches, rivers and waters
- 1899 – U.S. Congress passed the River and Harbor Act which prohibited constructing structures in navigable waters without first obtaining a permit from the U.S. Army Corps of Engineers
- 1955 – 8% of shoreline around the Mobile estuary is armored
- 1977 – Soil and Water Conservation Act
- 1997 – Research by Douglass and Pickel of the University of South Alabama estimate approximately 29 miles of armored shoreline in the Mobile estuary or 30%
- Local homebuilder associations have developed innovative erosion control mats to control sediment runoff on construction sites
- The cities of Spanish Fort, Daphne, and Fairhope are working together with the Eastern Shore Chamber of Commerce to develop uniform sediment control ordinances
- USA Graduate Student Becky Roland is studying the establishment of fringe wetlands as an environmentally preferable alternative to bulkheads in the Dog River watershed
- At best, silt fences are only 50% effective even when properly installed

On a personal level, would you throw trash, paint, oil, leaves, dirt into your own bathtub? If you don't want to swim in it, then don't throw it down on the street either. Those drains along the side of the road don't go to "never-never-land," but downstream into a river. The rivers in the Mobile Bay NEP study area drain into – Mobile Bay and the Tensaw Delta.



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