Priority Problem Two:

SEDIMENT AVAILABILITY

Sediments are particles of sand, silt, and clay that are washed away from the land by rain into rivers and bayous. These sediments can settle at the mouth of a river to form new land, known as a delta. Much of the land in the Barataria-Terrebonne estuary was built in this way by the Mississippi River. Sediments are also needed to maintain coastal marshes. Without inputs of new sediments, land is lost through a naturally occurring phenomenon called subsidence. Subsidence occurs over a period of time when sediment particles compact and sink below their previous level. Eventually the sinking land is flooded, causing vegetation to die.

Human modifications have reduced, disrupted, or eliminated sediments that were once carried by the Mississippi River into the adjacent wetland areas.

Dams on the Mississippi and its major tributaries, such as the Missouri and Arkansas, are a major cause for decreases in river sediments. Improved agricultural practices upriver that prevent soil erosion and flood protection revetments placed on the river banks have also reduced available sediments. Overall, the river carries 80% less sediments than it did a century ago.

Sediment dispersal into the estuary is restricted by artificial levees along the Mississippi River. In the past, marshes were enriched by sediments which were carried over the river bank by floodwaters. Now, levees confine these sediments to the Mississippi River channel where they are eventually discharged off the continental shelf at the river's mouth.

Historically, hurricanes and winter cold fronts stirred and pushed some sediments up from the shallow bays into the wetlands. Now, because of human impediments such as human-made banks and weirs, sediment is often prevented from reaching the marshes by this method.

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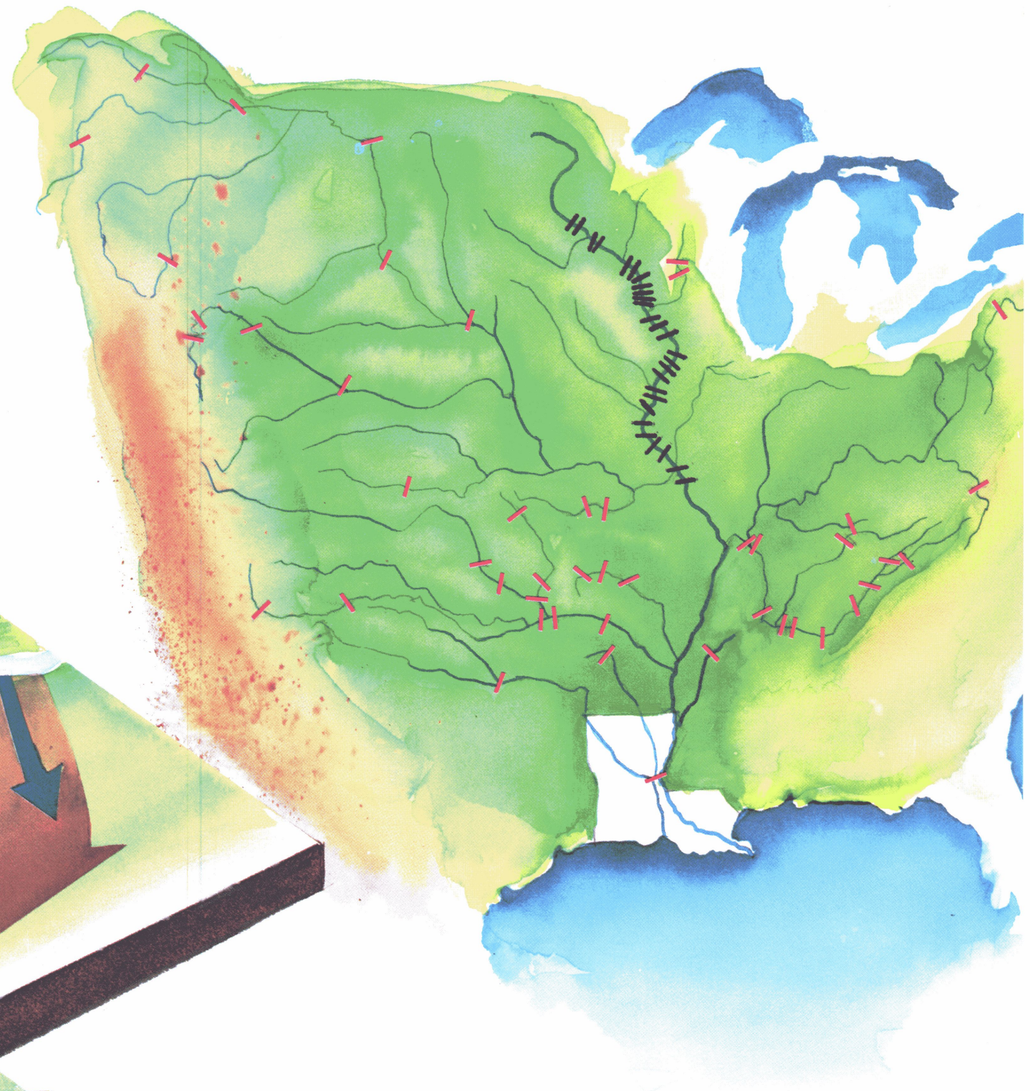
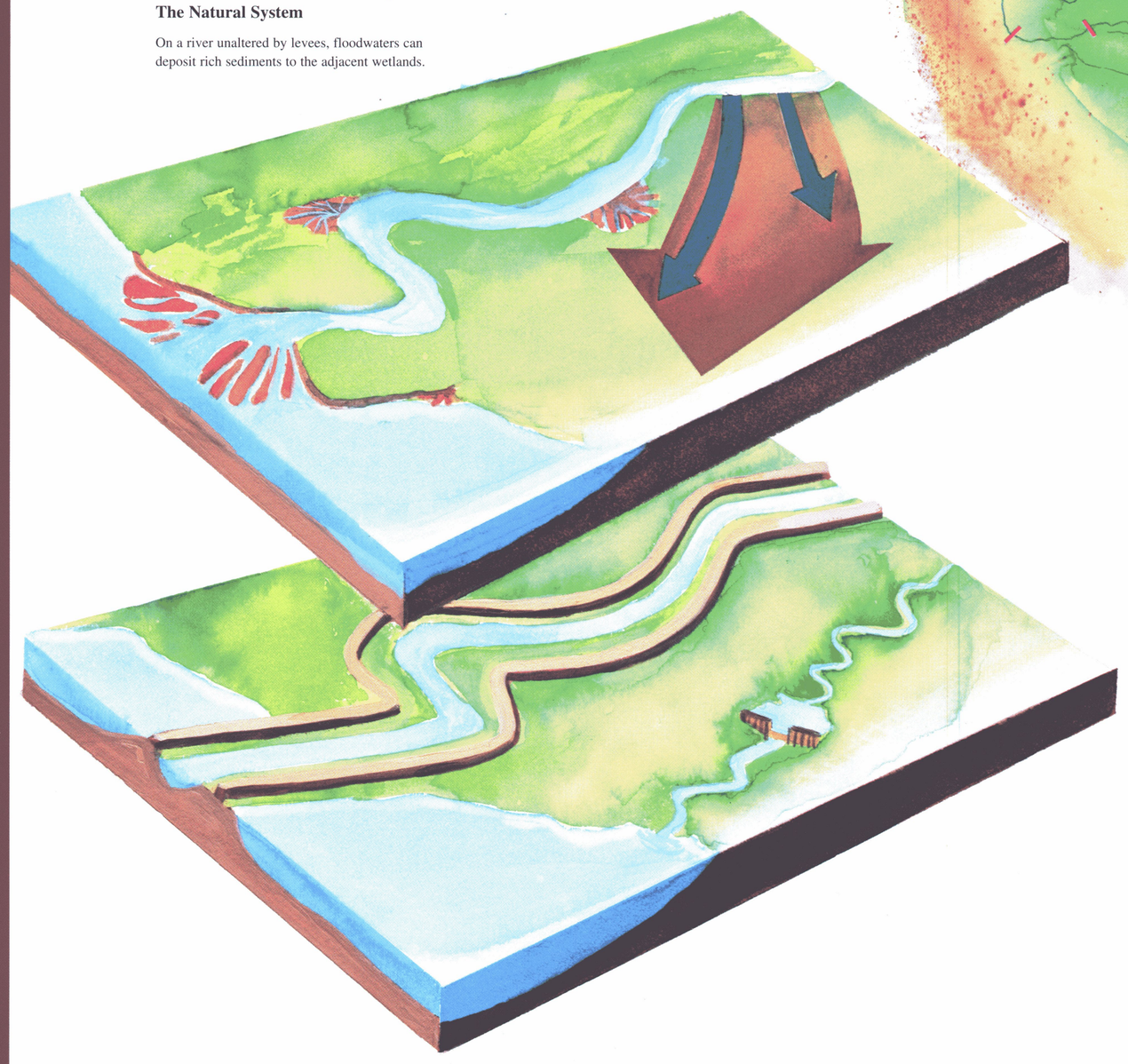
Dams Impede Sediments

Numerous dams on the upper Mississippi and its major tributaries collect sediments and restrict their flow downstream



The Natural System

On a river unaltered by levees, floodwaters can deposit rich sediments to the adjacent wetlands.



The Modified System

The lower Mississippi River has been modified by bank stabilization and a levee system which restrict the flow of sediments into wetland areas. Human-made banks and weirs also impede sediments that might be deposited by cold fronts and storms.

Delta Formation

The present Mississippi River Delta is deteriorating because of subsidence and lack of sediments. A large amount of sediments needed for marsh building is lost off the continental shelf.