

## **Large freshwater and sediment impoundments between the Mississippi River and the Louisiana coastline**

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**Abstract** An innovative system-level sediment and freshwater management plan is proposed for the coastal regions of Louisiana, USA. It involves the construction of large sediment and freshwater impoundments between the river and coastline fed periodically through large spillway structures during the rising hydrograph of the river when the highest concentration of sediment is in the water column. Sediment directing and trapping technologies are proposed for the river channel and spillways to capture the coarser-grained sediments. The embankments can be constructed from dredging and then enlarged by land-based harvesting of coarse-grained sediments from the traps. These impoundments will permit the continuous introduction of freshwater and finer-grained sediments to coastal marshlands for vegetation, land augmentation, protection from storm surges and salt water intrusion, while removing large amounts of sand from the river and decreasing annual maintenance dredging costs.

**Key words** system-level sediment and freshwater management plan; large impoundments; system-level diversions; sediment traps; land augmentation