PAST AND FUTURE EROSION TRENDS AT BELLE FONTAINE. JACKSON COUNTY. MISSISSIPPI

Stephen M. Oivanki. Miss. Office of Geology. Jackson. MS 39289 and Joseph N. Suhayda, Dept- of Civil Eng.. La. State Univ., Baton Rouge. LA 70803

The Belle Fontaine headland is the site of the only remaining natural beach on the Mississippi mainland coast. The beach is formed by longshore current disbibubbn of sand eroded from the Pleistocene bluffs located in the central portion of the area. Minofral erosion rates determined from companion of digitized USGS T-sheets and sepal photographs from the 1850's througn 1986 show a loss of 473 acres during that time period. Armoring of the bluffs by residents to protect their homes has deprived the longshore drift system of its natural sand source. As a result the erosion rates along the beach areas east and west of the bluffs has increased in recent years. A computer shoreline erosion model was developed for the area to predict future shoreline trends and to design shoreline protection methods. Wave data were collected with a wave meter dung a three-month winter storm period, detailed offshore bathymetry was acquired, nearshore botom profiles were measured, and sand grain size distribution was measured for inclusion in the model. A breakwater is indicated by the model to protect the bluffs from erosion by high waves, and selective sand nourishment is recommended along those sections of the beach where sand deficiency results from the breakwater placement. The model predictions will be tested this winter with a limited beach nourishment project by Jackson County and the EPA Gulf of Mexico Program. Sand will be placed at locations indicated by the model, and subsequent movement of the sand will be monitored by the Office of Geology. Variations from predicted results will be noted and the model will be refined to reflect observed field conditions.