ACCESS NUMBER: 29085

STUDY TITLE: Ecological Characterization of the Mississippi Delta Plain Region

REPORT TITLE: Mississippi Deltaic Plain Region Ecological Characterization: An Ecological Atlas - Map Narratives and Map Series

CONTRACT NUMBERS: BLM: MU8-28; MMS: 14-12-0001-29085

SPONSORING OCS REGION: Gulf of Mexico

APPLICABLE PLANNING AREAS: Central Gulf of Mexico

FISCAL YEARS OF PROJECT FUNDING: 1978; 1979; 1980; 1981

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COSTS: FY 1978: $377,750; FY 1979: $300,000; FY 1980: $207,500; FY 1981: $7,000

CUMULATIVE PROJECT COST: $892,250

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KEY WORDS: Central Gulf; Mississippi River; Louisiana; Mississippi; baseline; characterization; literature review; coastal zone; socioeconomics; geology; minerals; climate; hydrology; biology; sediment; archeology; employment; wetlands; maps; narratives; currents; riverine; habitat; nesting; spawning; juveniles; fish; shellfish; barrier islands

BACKGROUND: The purpose of the Mississippi Deltaic Plain Region Ecological Characterization Study was to compile existing information from the biological, physical, and social sciences for the study region. Habitat maps, a companion user's guide, and a map narrative report constituted a part of this characterization study. Funding was provided by the Bureau of Land Management and the work effort was completed through a Memorandum of Understanding with the U.S. Fish and Wildlife Service.

OBJECTIVES: (1) To discuss physical, biological, geological, climatological, and socioeconomic properties and processes within the study area; and (2) to discuss current trends in these processes and how they affect residents and industries within the study area.

DESCRIPTION: The study area was located in the coastal region of southeastern Louisiana and southern Mississippi. In Mississippi, the study area encompassed the entire coastal zone between the Alabama and Louisiana borders. In Louisiana, the western extent of the study area was terminated near the western shores of Vermilion

Bay. The offshore boundary for both states was the three- mile, State-Federal demarcation line. The following topics were discussed as they related to the study area: socioeconomic features, oil and gas infrastructure and mineral resources; soils, geologic/geomorphic features, and man-made lands; climatology and hydrology; active coastal processes; and biological resources.

SIGNIFICANT CONCLUSIONS: Socioeconomic elements, once limited by characteristics such as low elevations, vast wetlands, and threats from hurricanes, are now increasingly affecting resources in the area. The study area contains an immense wealth of mineral resources, including petroleum, natural gas, sulfur, salt, shell, sand, gravel, and clay. A gradual subsidence of land along the Louisiana coast has had a significant impact on the area. The main climatic features of the study area are its location in the subtropical humid climate and its nearness to the Gulf of Mexico. The configuration of the coastline is due largely to the deposition of vast amounts of sediment transported into the area by the Mississippi River.

STUDY RESULTS: Archaeologists identified ten cultural periods of Indian habitation in the study area. Maps delineate known settlements as sensitive areas. Abundance of employment opportunities in the study area is the primary reason for a marked population surge. Most job opportunities are in the mineral-related industries. The human population and industry are both facing limitations in available growing space due to the scarcity of dry land. As a result, wetlands are becoming increasingly affected by industrial and municipal waste. Water routes, either natural or man-made, are the primary paths of travel and require periodic to frequent dredging. Only major dredge spoil dumpsites are depicted on the maps, as the minor sites are too numerous to be shown.

By far, the most important resources of the area are oil and gas. The maps display oil and gas industry elements with regard to occurrence, procurement, transportation, storage, and processing. The study area also contains important economic deposits of non-fuel minerals resources, including sulfur, salt, shell, sand, gravel, and clay.

Continuous land subsidence has caused several changes; marsh land is changing to open water, fresh marsh is changing to saline marsh, swamps are changing to marsh, some frequently flooded lands are changing to swamps and lands once flood-free are now being flooded. Barrier islands are being threatened by both natural and human-induced factors. Four major land resource areas are recognized in the study area by the U.S. Department of Agriculture, Soil Conservation Service: Southern Mississippi Valley Alluvium, Gulf Coast Marsh, Eastern Gulf Coast Flatwoods, and Southern Coastal Plains. Soil characteristic of each of these areas are discussed in detail.

Climatological emphasis on the characterization map was placed on extreme event analysis to provide effective planning guides. Hydrologic features or processes that are mapped in this atlas include coastal currents, stream and river discharges, ground water resources, and water quality for selected streams and rivers.

Habitat maps were used to approximate the erosion or accretion of the study area's shoreline. Most of Louisiana is undergoing rates of erosion which are less than 24 ft per year. One area of major land gain is in Atchafalaya Bay. The Mississippi coast is stable from Pascagoula to Grand Island Pass, with shoreward advance south and east of Pascagoula as a result of coastal development. Fresh, brackish, and saline coastal marshes occur in the study area. Saline and brackish marshes both comprise a third of the total marsh area, with freshwater marsh covering two thirds. Between 1956 and 1978, there was a reduction of almost 55% of fresh marsh acreage for the study area. Biological resources for the study area include: oyster grounds and seed oyster beds; clam beds; fish spawning and nursery habitats for marine and estuarine dependent species; natural fishing areas; artificial reefs; submerged vegetation; sea turtle nesting sites; seabird, wading bird, and shorebird nesting sites; sensitive habitat; waterfowl concentration areas; furbearer concentration areas; and deep tidal passes.

STUDY PRODUCTS: Garofalo, D. 1982. Mississippi Deltaic Plain Region Ecological Characterization: An Ecological Atlas. Map Narratives. A final report by the U.S. Fish and Wildlife Service for the U.S. Department of the Interior, Minerals Management Service Gulf of Mexico OCS Office, Metairie, LA. NTIS No. PB83-157669. FWS/OBS-81/16. Contract No. 14-12-0001-29085. 96 pp.

Garofalo, D. 1982. Mississippi Deltaic Plain Region Ecological Characterization: An Ecological Atlas. Map Series. A map series by the U.S. Fish and Wildlife Service for the U.S. Department of the Interior, Minerals Management Service Gulf of Mexico OCS Office, Metairie, LA. FWS/OBS-81/16. Contract No. 14-12-0001-29085. Seventy-two map sheets, scale 1:100,000. Map Numbers A-1 through F-13.

*P.I.'s affiliation may be different than that listed for Project Managers.