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Project: Hydrodynamic and Sediment Transport Analyses to Support the DMMP for the Calcasieu Ship Channel and Pass

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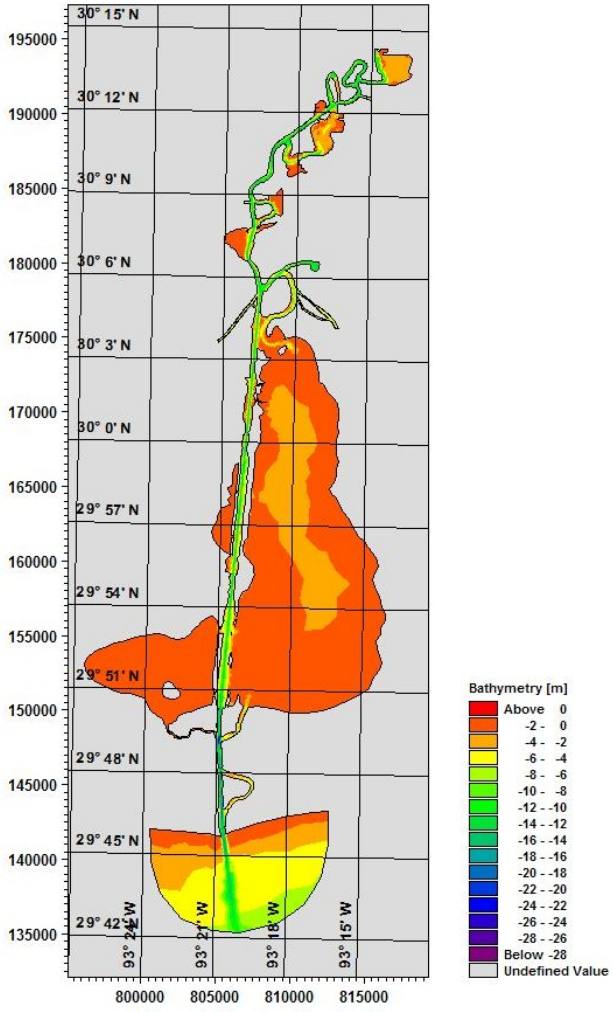
Calcasieu Ship Channel and Pass between river miles 5 and 34 requires significant annual dredging to keep the shipping channel open and passable. The annual dredge volume is approximately 4 million cubic yards which has historically been placed in confined disposal facilities along the sides of the ship channel. Since containment dikes are constructed of *in situ* materials, erosion caused by tidal and wind-generated currents, as well as the influence of ship wakes and fresh water inflow to the system have caused a significant volume of material within the confined disposal facilities to be reintroduced to the ship channel limits.



Prior to developing long-term solutions for dredged materials management, an understanding of the physical processes governing circulation and sediment transport were required. The initial stage of the program development was a field data collection program. The field program was conducted to augment the available information with water elevation measurements, current measurements, and metrological measurements at key locations within the system. In addition, the field program was supplemented with the deployment of wave gages along the Calcasieu Ship Channel to monitor vessel wakes.

The collected datasets formed the basis of information required to develop a hydrodynamic and sediment transport models. The goal of utilizing a combined hydrodynamic and sediment transport modeling effort was to identify sediment sources and sinks, as well as the associated sediment transport pathways, while taking into account the complex circulation patterns that dominate the Lake Calcasieu estuarine system. The use of the numerical modeling suite allowed quantification of both accretion and erosion areas that create significant shoaling problems within the Calcasieu Ship Channel. Therefore, once the models were developed it allowed for the analysis of a variety of future disposal sites and alternative dredge disposal sites (e.g. larger upland disposal sites or marsh islands) relative to both local hydrodynamics and sediment transport patterns.