

Salinity Changes in Corpus Christi Bay, Texas, due to Ship Channel Expansion

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Corpus Christi Bay is part of Nueces Estuary system and receives freshwater from Nueces River through Nueces Bay. The Corpus Christi Ship Channel runs from the Gulf of Mexico through Corpus Christi Bay to the Port of Corpus Christi, approximately 22 miles (35 km). The existing design width is 500 feet (152 m) and the depth is 45 feet (14 m). The Port Authority would like to widen the channel to 530 feet (162 m) and deepen it to 52 feet (16 m) so that larger ships can navigate the channel. As part of the environmental impact assessment the TWDB was asked to analyze the changes in circulation and salinity due to the channel expansion. We used a 2D finite element model, TxBLEND, to simulate two two-year periods, 1988/1989 representing a dry period and 1991/1992 a wet period. It was found that the salinity would not increase very much, less than 1 ppt, during the dry period, while it would reduce the salinity significantly during the wet period by as much as 4 ppt.