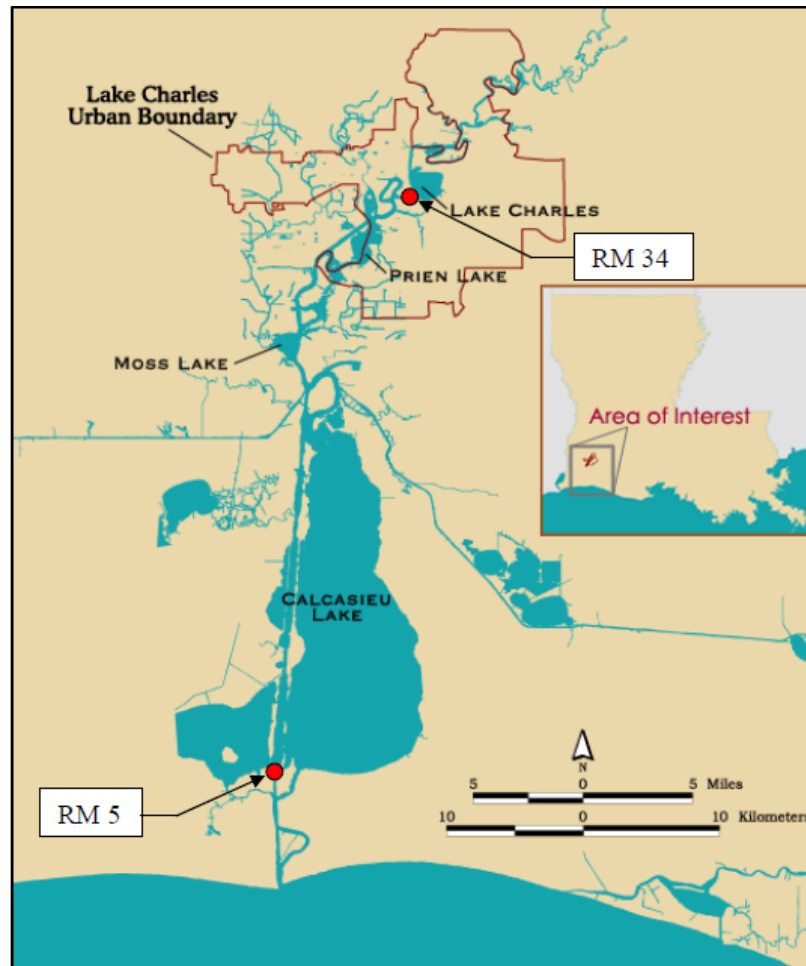




**Investigation of Sources of Sediment Associated with  
Deposition in the Calcasieu Ship Channel (CSC)**

**Description**

This project is an investigation of the potential sources of sediment associated with dredging in the Calcasieu Ship Channel (CSC). The study will employ multiple methods, including numerical analysis, to identify potential sources of sediment by first examining the energetics (shear stresses, velocities wind conditions, etc.) and flow pathways of the system, and then estimating the quantities of sediment associated with these identified (potential) sources that may be contributing to the shoaling of the CSC.



Location of the CSC (source: Fischenich, 2004)

**Issue/Challenge  
To Address**

The Calcasieu Ship Channel (CSC) is a deep-draft Federal Channel located in Southwest Louisiana. It is the channelized lowermost segment of the Calcasieu River, connecting Lake Charles to the Gulf of Mexico. Between river miles 5 and 34, approximately 1.4 million cubic yards per year (mcy/yr) of sediment is dredged to maintain the channel. In 2003, MVN sponsored a study of the project to determine the extent to which erosion of the banklines and of Confined Disposal Facilities (CDF's) adjacent to the channel contribute to the shoaling. The study was conducted by personal in the Environmental



US Army Corps  
of Engineers  
Engineer Research and  
Development Center

## National Regional Sediment Management Program New Orleans District (MVN):



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Laboratory at the Engineer Research and Development Center (ERDC). The study found that approximately 0.2 mcy/yr of sediment was contributed by erosion to the sediment and available for deposition in the channel. Further, the study found that the sediment load from the Calcasieu River was approximately 0.1 mcy/yr of sediment. (Fischenich, 2004). Hence, the combined contributions of the identified sources of sediment to channel deposition are a maximum of 0.3 mcyh/yr, which represents only 21% to the total volume dredged annually. Therefore, in order to understand and potentially mitigate for channel sediment deposition, it is necessary to identify and quantify the source or sources of the remaining 79% of sediment that is deposited in the CSC.

#### Successes Lessons Learned

Lessons learned will be compiled during the duration of this study.

#### Expected Products

- Identification of potential sources of sediment to the CSC
- Quantification of the range of the potential relative magnitudes of these sources
- Final report and presentation

#### Stakeholders/Users

Stakeholders include the Lake Charles Harbor and Terminal District, and the Calcasieu Water Safety Committee.

#### Projected Benefits Value Added

Depending on the conclusions of this study, there is a potential for significant value added, in terms of a reduction in dredging costs. If the investigation reveals that a significant portion of the sediment that is deposited in the CSC is derived from sources for which there is potential mitigation, then the dredging costs could be reduced significantly. In addition, the lessons learned from this effort, again depending on the results, could be applied to other ports in other estuaries, resulting in even greater cost savings.

#### Leveraging Opportunities

This study will leverage several existing and ongoing studies. An Adh model mesh was developed previously to support ship simulator studies, and this mesh is currently being used to investigate navigation conditions at the Calcasieu Locks. In addition, previously studies of sedimentation in the system, including the aforementioned study (Fischenich 2004) as well as a study of the sediment gradation and sediment types associated with the dredged material (Channell et. al. 2004) will be utilized.

#### Points of Contact

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#### Participating Partners

There are no participating partners

#### References

Channell, Mike, Susan Bailey, and Landris Lee (2004) "Calcasieu River and Pass Dredged Material Sediment Study" DRAFT report prepared for US Army Engineer District, New Orleans.

Fischenich, Craig, J. (2004) "Calcasieu River and Ship Channel, Erosion and Sediment Impact Assessment (Phase 1)" DRAFT report prepared for US Army Engineer District, New Orleans.