

FY17 RSM IPR

MVN, Maintenance of Hopper Dredge Disposal Area, Jeff Corbino (MVN)

BLUF: This study is an investigation of the efficacy of several potential options for reducing life cycle cost associated with the recurring maintenance dredging of the Hopper Dredge Disposal Area (HDDA) in the Lowermost Mississippi River. Specifically, the study will investigate the influence of dredging Pass a Loutre and/or South Pass, to determine how dredging these passes may influence sediment deposition in the HDDA. The study will also assess the impact of the observed growth of the Ft. St Philip Crevasse (located just upstream of Venice on the left descending bank of the river) on local and regional morphologic change

Challenge/Objectives

- The current strategy for maintaining Southwest Pass with a combination of hopper and cutter head dredges necessitates the continued availability of the HDDA.
- The HDDA is no longer self-sustaining and must periodically be dredged by a dedicated cutter head dredge
- Several alternatives are being explored to help mitigate the need for dredging in the HDDA.

Approach

(including Tools/Models/Data Used)

This effort leverages data and numerical models already developed for the Mississippi River Hydrodynamic Study and the Mississippi River Delta Management Study.

Specifically, an Adaptive Hydraulics (AdH) multi-dimensional model, linked to the SEDLIB sediment transport library, was developed and validated for hydrodynamics and sediment transport, as a product of these studies. This model is being utilized for this RSM effort.



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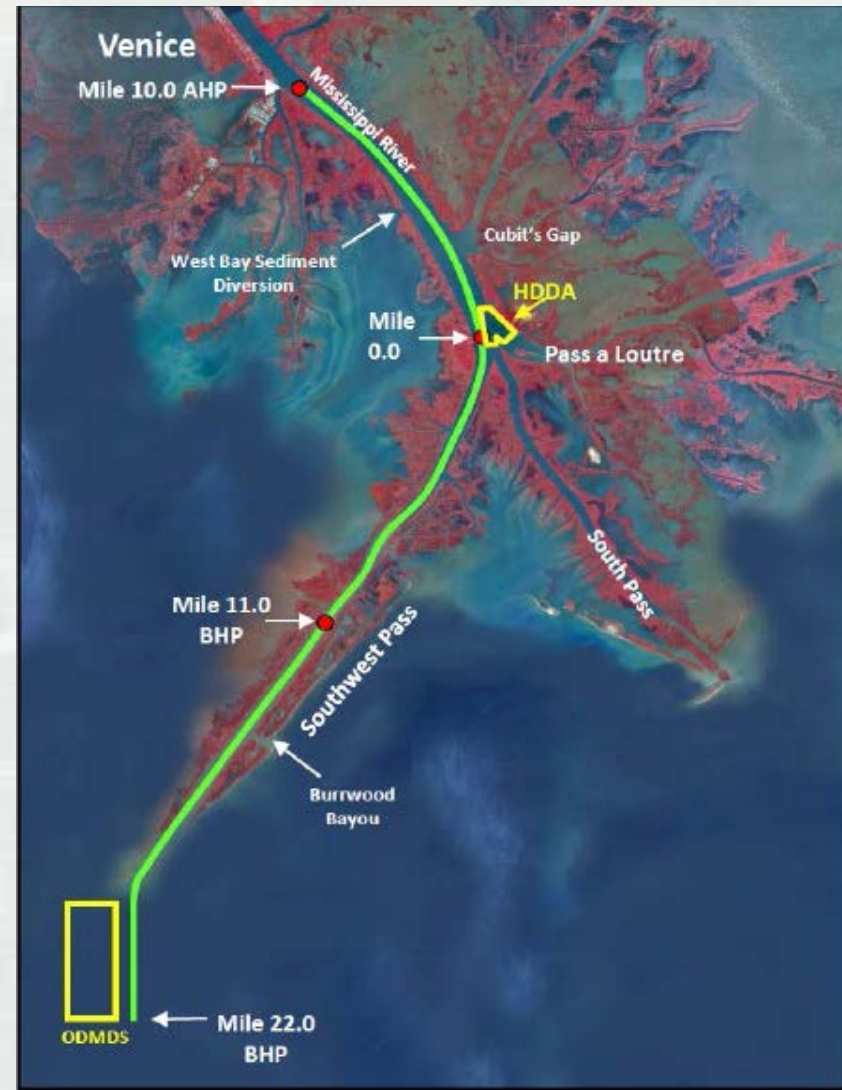
MVN, Maintenance of Hopper Dredge Disposal Area

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Leveraging/Collaborative Opportunities

This work unit is leveraging model development that was done as part of the Mississippi River Hydrodynamic and Delta Management Study. It is also leveraging dredging data that were assimilated in support of the Mississippi River Channel Deepening Study. Both studies were sponsored, at least in part, by MVN.



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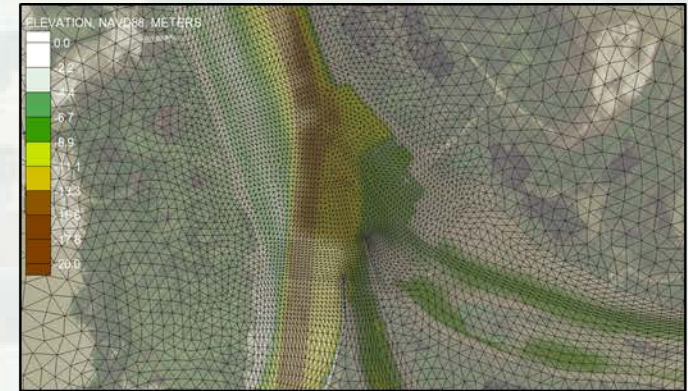
Accomplishments/Deliverables

Lessons Learned/Actions-construction

Significant effort was expended to update the model mesh and model bathymetry

Model has been validated to hydrodynamic conditions, including distribution of flow through existing passes

Modeled Flow separation at HDDA likely to induce deposition at the site



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What is working? Ups? Success?

Mesh has been refined and the bathymetry updated, and hydrodynamics are behaving consistent with observed conditions

What is not working? Downs? Issues?

Model validation against observed suspended sediment and dredging data is delayed due to time spent improving mesh and checking hydrodynamic validation. However, the previous experience of the modelers with several previous studies at this location should assist in ensuring that validation can proceed quickly.



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How is this project benefiting the USACE and Nation

Mitigation of dredging at the HDDA can save significant taxpayer dollars. Also, lessons learned concerning the sediment dynamics in the lowermost Mississippi River can be applied to other large river systems within the Corps mission space. This includes the regional effects of these local changes: this study can be used to illustrate the importance of regional planning for sediment management.

