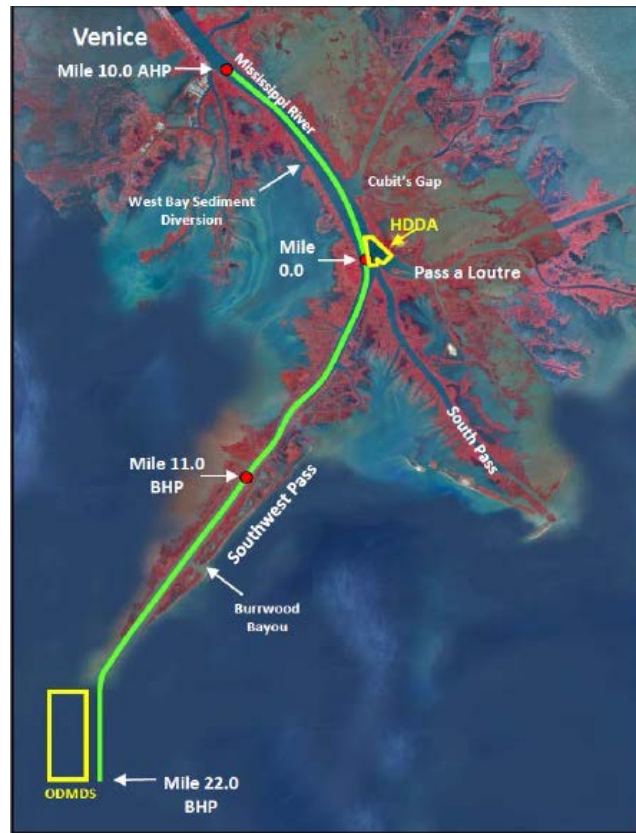




Maintenance of Hopper Dredge Disposal Area (HDDA)

Description

This study will investigate 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 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 (a gradual but significant increase in the discharge through the Ft St Philips Crevasse has been observed since its opening in 1973).



Lowermost Mississippi River and the HDDA

Issue/Challenge To Address

The current strategy for maintaining Southwest Pass employs a combination of hopper and cutter head dredges. This strategy necessitates the continued availability of the HDDA. However, the HDDA is no longer self-sustaining and must periodically be dredged by a dedicated cutter head dredge. HDDA was first dredged in 1998 where 1.1 MCY was removed. It was subsequently periodically dredged between 2000 and 2008, with the most recent maintenance dredging occurring in between 2010 and 2015 under three USACE maintenance contracts. These contracts removed a combined total of 27.2 MCY of dredged frequency (need) and quantity available for removal since the 1998 maintenance event.



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It has become apparent that the capacity of the HDDA is quickly exhausted after dedicated dredging of the site by both natural sedimentation and hopper disposal. However, there are no known alternate hopper placement sites or dredging strategies that could substitute for or reduce dependence on the HDDA. Therefore, the continued viability of the HDDA is vital for the maintenance of Southwest Pass.

Factors that may have diminished self-scour of the site during the last 25 years are poorly understood but likely include the reduction in conveyance potential from the site at varying river stages due to shoaling of South Pass and Pass a' Loutre. Other factors that may influence deposition at the HDDA include the growth of existing upstream diversions, such as the Ft. St Philip crevasse. Each of these possibilities must be investigated to determine both their influence on existing scour and deposition, and the efficacy of alterations to these conditions on the future viability of the HDDA.

Successes Lessons Learned

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

Expected Products

- Numerical model results detailing the influence of various proposed changes on sediment erosion and deposition within the HDDA
- Mapping of proposed locations for sediment placement for beneficial use
- Final Report and Presentation

Stakeholders/Users

Stakeholders include multiple Local, State and Federal agencies, as well as Navigation interests.

Projected Benefits Value Added

This effort has a potential of significant cost avoidance associated with the routine maintenance dredging of HDDA. It will also contribute to a greater understanding of the hydrodynamic and sediment dynamics of the Lowermost River, and serve as an additional management tool for investigating the system-wide effects of any future proposed alterations to the system.

Leveraging Opportunities

This effort will leverage 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 was developed and validated for hydrodynamics and sediment transport, as a product of these studies. This model will be utilized for this RSM effort.

Points of Contact

Cherie R Price, CEMVN-PD-PDR
Regional Planning & Environmental Division, New Orleans District
504-862-2737
Cherie.Price@usace.army.mil