

# UMRS Channel Maintenance Issue Assessment

Upper Mississippi River Basin Association  
(as of February 1, 2016)

## Issue Statement

Increasingly in recent years, the U.S. Army Corps of Engineers (Corps) has undertaken emergency measures to reopen or maintain the navigation channel as a result of channel conditions. The Upper Mississippi River System (UMRS) states assert that these situations are compounded by lack of proactive, strategic channel maintenance planning to address issues that have been building for decades. Emergency situations place the states in a difficult, reactive position of having to expedite environmental reviews in order to issue required permits, as well as providing important information about biota impacts. Challenges associated with escalating severity of flood and drought conditions, sedimentation, costs, and limited disposal sites will continue to increase over time. District staff have done a tremendous job of working within these constraints to maintain a safe and reliable navigation system. However, the UMRS states are concerned with the Corps' ability to continue to effectively respond to such situations in the near and long-term without the strategic channel maintenance plans in place.

## Position Statement

The UMRS states respectfully request that the three UMRS Districts work through their existing coordination groups to develop new, or renew existing, comprehensive long-term channel maintenance management strategies for dredging and dredged material management that are sustainable, cost-effective, and environmentally friendly. Recognizing the unique environmental and interagency dynamics within each District, we acknowledge the need for each District to develop strategies that are best suited for its respective needs. The strategies should address issues associated with the following:

1. Dredged material placement planning, including beneficial use and capacity constraints of disposal sites
2. Real estate acquisition
3. Increasing sedimentation (dredging volumes) and other land use influences
4. Climate change and episodic weather events that cause extreme floods or droughts
5. Escalating costs of channel maintenance and associated activities
6. Contingency planning to avoid emergency situations
7. Water level forecasting capabilities
8. Resource constraints for channel maintenance

To facilitate coordination on permitting, the states also respectfully request that the Corps renew expired memorandums of agreement or create new agreements, where desired.

## Information Needs

The UMRS states offer the following questions for the Corps' consideration in order to facilitate thoughtful and deliberative dialogue required to determine efficient, effective, and sustainable solutions to channel maintenance:

1. *Disposal sites* – Where do disposal sites exist and which sites are at, near, or under capacity? Is the Corps targeting acquisition of new disposal sites and where? What is the Corps doing to ensure adequate capacity to place dredged material, especially in emergency situations? What protection measures exist to prevent erosion of disposal sites?
2. *Beneficial uses* – What are the results (insights gained) of recent specific examples of cases where beneficial use of dredged material has been accomplished in each District? What are the challenges

and opportunities developing markets for beneficial use of dredged material? How can environmental benefits be accounted in cost-benefit analyses to use in evaluating alternatives to dredged material management?

3. *Interagency coordination* – How does each District coordinate with interagency partners that have river management responsibilities? What triggers information sharing and input solicitation? What tools might help facilitate interagency communication and coordination – e.g., time-lapse of channel surveys to understand longer term dynamics of sediment deposition?
4. *Accumulation hot spots* – Where are there sediment accumulation hot spots in the navigation channel that will need to be dredged in the near term (next 1 to 5 years)?
5. *Sedimentation sources* – Where are the major in-stream and watershed sources of sedimentation that need to be addressed in the near and long term? What are opportunities to reduce those sources?
6. *Previous, existing strategic plans* – What are insights gained from the 1980-1981 Great River Study (GREAT), 2001 Channel Maintenance Management Plan (CMMP), and dredged material management plans (DMMPs)?
7. *Data and technology* – What new or existing data, maps, models, and other technologies would be beneficial to better predicting existing and future sediment inputs and understanding other needed information? Are there existing studies that can inform dredged material placement, including ecological resources considerations?

## **Environmental Issue Context**

The UMRS is a complex and dynamic system for sediment movement. Tributaries have significant influence on the river system, primarily for their discharge and sediment contributions. Contrary to the increasing sediment loads over time from most UMRS tributaries, the Missouri River's dams hold back much of the historic sediment load, creating sediment-starved conditions on the Mississippi River south of the Missouri River's confluence. In many areas of the UMRS, sedimentation has filled-in many backwaters, channels, and deep holes. In the lower reaches of the UMRS, sediments have filled the areas between many wing dikes thereby narrowing the channel and reducing or degrading aquatic habitat. The variation in ecological conditions from north to south creates unique challenges and requires different approaches to channel maintenance. Erosion of the shoreline banks and islands is also a source of sediment deposition in the main channel.

## **Historical Policy Context**

Since Congress first authorized the Corps to maintain the UMRS as a commercial navigation channel in 1824, the agency has used a variety of structural measures and dredging techniques to provide the depth needed in the main channel to facilitate the movement of waterborne commerce. Congress incrementally increased the minimum water depth in the navigation channel until the last increase to nine feet in the River and Harbors Act of 1930. The Corps' channel maintenance activities have evolved over time, including removing snags, shoals, and sandbars, constructing structural modifications (e.g., locks and dams, wing dikes, bendway weirs), and dredging.

### *Integrated, Multi-Use Long Range Planning Starts With Channel Maintenance*

The 1970 National Environmental Policy Act (NEPA) required the Corps to complete the 1974 environmental impact statement (EIS) for the operation and maintenance of the UMRS navigation channel. The EIS concluded that there was a lack of comprehensive information available to evaluate approaches to river management and called for federal-state interagency partnerships to develop a river system management plan for each of the three UMRS Districts, authorized in the 1976 WRDA and collectively referred to as the Great River Study. Coordinated through interagency Great River Environmental Act Teams, the reports are referred to as the GREAT studies. A key outcome of the GREAT studies was a detailed channel maintenance plan nestled in an integrated resource management plan that considered all of the river's multiple uses. Facilitated by the Upper Mississippi River Basin Commission and in coordination with

a federal-state interagency team, each District completed a GREAT study for management within its respective boundaries in 1980-1981. The St. Paul, Rock Island, and St. Louis District study reports were named GREAT I, GREAT II, and GREAT III, respectively. The St. Louis District did not formally adopt the GREAT III study, given simultaneous overlapping efforts under the 1982 UMRS Comprehensive Master Plan. Each report included a series of channel maintenance recommendations tailored to the District's unique environmental characteristics, particularly sediment depositions, and interagency partnership and management dynamics. The recommendations addressed dredging volumes, containment and stabilization of dredged material placement sites, beneficial uses for dredged material, environmentally-sound techniques and approaches (including in-river structural modifications), sediment transport, and compliance with federal and state regulations. These plans were anticipated to remain viable in the long term, with the St. Paul District explicitly expecting the relevance of the GREAT I's recommendations to last to 2025.

### *Interagency Collaboration*

At the same time, in the mid 1970s, Wisconsin and Minnesota filed lawsuits resulting in the determination that water quality permits were required for the Corps' channel maintenance operations. This led the Corps to establish standing federal-state interagency committees to develop and implement long range strategies for multi-purpose management of the system. The lawsuits were also partially responsible for the Section 404 water quality certification provision of the 1977 Clean Water Act. A 1996 Iowa lawsuit ruling regarding impacts to fish and wildlife from a dredged material placement site confirmed that the Corps is legally required to obtain approval from the respective state in which the activity occurs. The states typically use Section 401 state water quality certifications to set conditions to the permits. In addition, the 1978 Inland Waterways Authorization Act authorized the Upper Mississippi River Basin Commission, in cooperation with the appropriate federal, state, and local interests, to develop a Comprehensive Master Plan, which took a system-wide approach to resource management issues rather than subdividing by District. The 1978 Act included a provision for evaluating the disposal of dredged material. The GREAT studies served as a foundational reference for the Master Plan's channel maintenance resource recommendations regarding disposal sites, where available. The Master Plan also reinforced the preceding recommendations for system-wide interagency governance of multi-purpose management.

### *Channel Maintenance Post-GREAT Study*

While it was envisioned that the GREAT recommendations would be sustained over a long planning horizon, changes in climate, land-use throughout the watershed, and riverine structures and processes have resulted in modified hydrologic conditions and sedimentation patterns that were not anticipated at that time. Over time, each District's channel maintenance program has evolved to deal with its unique circumstances, resulting in different management approaches among the Districts – in terms of planning, funding, interagency coordination, and approaches and techniques. For example, the St. Paul and Rock Island Districts have historically used dredging as the primary mean to maintain the nine-foot channel depth, whereas the St. Louis District has placed significant investment in structures (dikes and weirs) that use the system's high energy to concentrate flow and keep the sediment moving down river and prevent accumulation.

The St. Paul District completed the 1995 CMMP that outlined long term management strategies for channel and harbor maintenance, including strategic planning of placement sites and identifying alternative channel maintenance techniques. While it is now outdated, interagency partners found the CMMP to be extremely valuable. The Rock Island District engaged interagency partners in a planning effort that resulted in a draft long term channel maintenance plan. However, the plan was never formally adopted. The St. Paul and Rock Island Districts develop DMMPs for sub-sections of the river to evaluate specific dredging locations and provide instructions for subsequent management of the material, including by evaluating the feasible alternatives and addressing capacity issues associated with placement sites. These plans have reached the end of their useful planning duration and the two Districts are now updating them as resources allow. The St. Louis District works through its Regulatory Works Program, employing more of an *ad hoc* approach to dredging and dredged material management and interagency coordination as the need arises. In 2014 and 2015, the District prepared a summary of chronic dredging sites and placement locations.