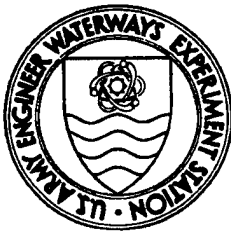


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March 1988



# *Environmental Effects of Dredging Technical Notes*

## ENGINEER MANUAL SERIES ON DREDGING AND DREDGED MATERIAL DISPOSAL

**PURPOSE:** This technical note describes a series of Engineer Manuals (EMs) on dredging and dredged material disposal being published by the Office, Chief of Engineers, US Army. The note describes the purpose of the manual series, intended audience, major topics covered, availability of published manuals, and the status of future manuals.

**BACKGROUND:** Manuals already published in the series include EM 1110-2-5025, "Dredging and Dredged Material Disposal"; EM 1110-2-5026, "Dredged Material Beneficial Uses"; and EM 1110-2-5027, "Confined Disposal of Dredged Material." This manual series is the first comprehensive guidance on dredging and disposal developed for routine Corps use.

The guidance contained in the manuals was developed based on experience of the Corps Districts and Divisions and research conducted under the Dredged Material Research Program (DMRP) and subsequent research programs managed under the Environmental Effects of Dredging Programs (EEDP). As additional information becomes available, the EM series will be updated with published changes or new manuals.

**ADDITIONAL INFORMATION OR QUESTIONS:** Contact the EEDP program manager, Dr. Robert M. Engler, commercial or FTS: (601) 634-3624. Questions on the content of respective manuals and suggestions for changes or additions can be directed to the author, Dr. Michael R. Palermo, (601) 634-3753, for EM 1110-2-5025 and EM 1110-2-5027, or Dr. Mary C. Landin, (601) 634-2942, for EM 1110-2-5026.

### Description of Engineer Manual Series

Technical guidance for planning, design, operation, and management of Corps of Engineers projects is normally published in Engineer Manuals (EMs). The information and procedures contained in EMs are not considered policy or regulation, but rather official guidance. Use of alternate procedures should be justified on a technical basis.

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**QUALITY INSPECTED**

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The Office, Chief of Engineers, US Army is publishing a series of EMs on dredging and dredged material disposal. Manuals published thus far include the following:

EM 1110-2-5025, "Dredging and Dredged Material Disposal"

EM 1110-2-5026, "Dredged Material Beneficial Uses"

EM 1110-2-5027, "Confined Disposal of Dredged Material"

These manuals have been developed for routine use by engineers and scientists in Corps Districts and Divisions involved in all aspects of dredging projects. The information contained in the manuals is applicable to all functional areas (i.e. planning, design, construction, operations, and maintenance). Descriptions of the purpose and scope of each manual are given in the following paragraphs.

EM 1110-2-5025, "Dredging and Dredged Material Disposal"

EM 1110-2-5025 is the "umbrella" manual of the series. The manual includes a description of dredging equipment and disposal techniques used in the United States and provides guidance for activities associated with both new work and maintenance projects. The manual also provides basic guidance on evaluating and selecting dredging equipment. A descriptive overview of disposal alternatives is provided, since more detailed guidance on disposal alternatives is available in other manuals in the series.

The major topic areas contained in EM 1110-2-5025 are as follows:

- Design considerations for dredging projects
- Dredging equipment and techniques
- Factors in equipment selection
- Dredge operating characteristics
- Advances in dredging technology
- Environmental considerations for dredging
- Sediment resuspension due to dredging
- Evaluation of dredged material pollution potential
- Influence of disposal conditions on impacts
- Overview of open water disposal
- Overview of confined disposal
- Habitat development as a disposal alternative

EM 1110-2-5026, "Dredged Material Beneficial Uses"

EM 1110-2-5026 provides guidance for planning, designing, developing, and managing dredged material for beneficial uses. The manual incorporates ecological concepts and engineering designs with biological, economical, and social feasibility.

The major topic areas contained in EM 1110-2-5026 are as follows:

- Dredged material as a resource
- Logistical considerations for beneficial use
- Habitat development case studies
- Habitat development selection process
- Wetland habitat development with dredged material
- Upland habitat development with dredged material
- Island habitat development
- Aquatic habitat development
- Beaches and beach nourishment
- Aquaculture
- Parks and recreation uses
- Agricultural and related uses
- Strip mine reclamation and landfill cover use
- Multipurpose and other land use
- Construction and industrial/commercial uses
- Baseline data collection and monitoring techniques
- Site valuation

EM 1110-2-5027, "Confined Disposal of Dredged Material"

EM 1110-2-5027 provides guidance for planning, designing, constructing, operating, and managing confined dredged material disposal areas. Site design to retain suspended solids during disposal operations and to provide adequate short- and long-term storage capacity is included.

Major topic areas contained in EM 1110-2-5027 are as follows:

- Field investigations and sampling
- Site selection to avoid groundwater impacts
- Settling tests for evaluation of solids retention

Consolidation tests for evaluation of long-term storage  
Design for solids retention  
Design for storage during filling  
Weir design  
Design of chemical clarification systems  
Prediction of dredged material consolidation  
Dredged material dewatering operations  
Design and construction of dikes  
Operation and management activities  
Long-term management plans

#### Status of Additional Manuals

An additional manual entitled "Open Water Disposal of Dredged Material" is now in review. Major topic areas contained in this manual include: open water disposal environments and associated dredging practices, short-term and long-term physical fate of material disposed in open water, ecological evaluation of open water disposal, site designation and selection, environmental impacts, control measures, and site management and monitoring.

#### Availability of Manuals

Engineer manuals are published and distributed by the Office, Chief of Engineers, US Army. The manuals can be obtained by written request addressed to:

US Army Corps of Engineers  
Publications Depot  
2803 52nd Avenue  
Hyattsville, MD 20781-1102

The title and number of the EM should be included in the request.

#### **References**

- Office, Chief of Engineers, US Army. 1983. "Dredging and Dredged Material Disposal," Engineer Manual 1110-2-5025, 25 March 1983, Washington, DC.
- Office, Chief of Engineers, US Army. 1987. "Dredged Material Beneficial Uses," Engineer Manual 1110-2-5026, 30 June 1987, Washington, DC.
- Office, Chief of Engineers, US Army. 1987. "Confined Disposal of Dredged Material," Engineer Manual 1110-2-5027, 30 September 1987, Washington, DC.

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