

## CHAPTER 1

### INTRODUCTION

1-1. Purpose. This manual provides guidance for planning, designing, developing, and managing dredged material for beneficial uses, incorporating ecological concepts and engineering designs with biological, economical, and social feasibility.

1-2. Applicability. This manual applies to all HQUSACE/OCE elements and all field operating activities having Civil Works design responsibilities.

1-3. Background. Dredged material disposal provides opportunities for a number of environmental, economic, and aesthetic beneficial uses. Innovative beneficial uses appear to be unlimited, and over 1,300 cases of beneficial uses of disposal sites have been documented in North America alone.

a. Ten broad categories of beneficial uses have been identified, based on their functional use of dredged material at disposal sites. They are:

(1) Habitat development (wetland, upland, island, aquatic, including migratory and nesting use by waterbirds, shorebirds, waterfowl, and other groups).

(2) Beach nourishment.

(3) Aquaculture.

(4) Parks and recreation (commercial and noncommercial).

(5) Agriculture, forestry, and horticulture.

(6) Strip mine reclamation and solid waste management.

(7) Shoreline stabilization and erosion control.

(8) Construction and industrial use (including port development, airports, urban, and residential).

(9) Material transfer (fill, dikes, levees, parking lots, roads).

(10) Multiple purpose.

b. Recognition of the ecological value of many areas that have been historically used as dredged material disposal sites has resulted in severe environmental constraints on location and placement of disposal sites, especially those in open water and wetlands. These constraints have increased the values placed on coastal and riparian wetlands and aquatic areas, and have

increasingly accented the need for alternate methods of dredged material disposal. As land uses have changed and areas once available for dredged material disposal have become scarce, the concept of beneficial use of dredged material disposal sites, such as land improvement and habitat development, have become more attractive economically and more environmentally acceptable. Dredged material is a manageable, valuable soil resource, with beneficial uses of such importance that plans for ultimate use of disposal sites should be incorporated into project plans and goals at the project's inception.

c. The known and potential effects of dredging and dredged material disposal on the environment in and around U. S. waterways has led to considerable research efforts and interagency and intraagency coordination. Many waterway projects involving dredging have purposes which require consideration of ecological effects. While maintenance of navigable channels is the prime objective, the development and application of beneficial alternatives for dredged material disposal must receive appropriate consideration.

#### 1-4. Environmental Considerations.

a. Since enactment in 1969 of the National Environmental Policy Act (NEPA) with its requirement for environmental full disclosure (including, in this case, a detailed accounting of disposal alternatives), pressure for greater reliance on confined or on-land disposal of dredged material has increased significantly. At the same time, upland disposal sites are being rapidly depleted due to urbanization, agriculture, and utilization of available capacity in existing sites. Concerns for improvement and/or maintenance of water quality and protection of aquatic nursery, spawning, fish passage and migration, and feeding areas have been factors in removing open-water and peripheral wetlands from the inventory of potential disposal sites (Item 81). It should be noted that, except in cases of contaminated material, the dredging operation does not cause a great deal of concern with regulatory agencies. Although neither open waters nor wetlands can be categorically dismissed from consideration as disposal options, dredgers have generally turned their attention toward uplands, transferring the disposal problem from an aquatic to a land environment except in specific cases such as the lower Mississippi River where 50 square miles of marsh are being lost each year to subsidence and erosion. There, marsh is being purposefully created by disposal in shallow open water. Efforts to control land use have increased and intensified due to advancing urban sprawl, its attendant reduction in natural or open areas, and, even more recently, a heightened awareness of the socioeconomic and environmental impacts associated with uncontrolled development. In recent years, only in the special case of the Great Lakes where in-lake confined disposal facility (CDF) islands have been built, and in certain harbors where CDF's and islands were permitted, has land been created where an aquatic environment previously existed.

b. In this context, the legal/regulatory framework associated with control of the entire dredging and disposal operation must be considered. Degrading water quality has caused greater emphasis to be placed on assessing

hypothetical impacts of disposal operations in open waters and wetlands. These concerns have led to a profusion of legislation at the Federal, state, and local levels designed to control nearly every facet of the dredging and disposal operation.

c. With the realization of the expanding and changing legal framework, keeping abreast of variations in legislative trends and societal attitudes is necessary to ensure comprehensive planning and development of all projects. Federal and state roles and interactions affect implementation of the beneficial use of dredged material. Although the primary impact and concern of legislation is associated with the disposal operation, most laws make no distinction between dredging and disposal. The state regulatory agencies have a major role in the implementation of programs designed to beneficially use dredged material in state-controlled waters or under the jurisdiction of approved state coastal zone management programs. As societal pressures for the wise use of environmental resources grow, changes in institutional arrangements are likely to continue.

d. The Federal Government is a major landholder, but is not a major land controller. As derived from their police powers, state and local governments retain most of the land use control authority. The Federal role is founded upon the Commerce Clause (Article I, Section 8, U.S. Constitution), which limits the Police Power insofar as local, state, and private activities adversely affect interstate commerce. This regulatory power has been defined to include regulation of the use and development of navigable bodies of waters and their beds in the public interest. Such power is referred to as "navigation servitude" and is vested in the Corps of Engineers (CE). This navigational servitude, and Federal grants, technical assistance, and aid programs, causes a predominant role in the regulatory hierarchy. Primarily, the Federal government provides legislative leadership.

e. Although there are more than 30 Federal laws and Presidential Executive Orders (EOs) applicable to beneficial use activities, documentation or public coordination is only required when a beneficial use falls within the specific jurisdiction of a law or EO. The requirement to demonstrate compliance in some cases, such as in EO 11988, is little more than a sentence or two in the NEPA document. In other instances, such as the Clean Water Act of 1977 (CWA), extensive coordination and environmental evaluations may be required. Further, the environmental compliance process for private versus CE dredging and disposal is different. All activities in navigable waters and wetlands require authorization by permit from the CE, while CE activities must demonstrate compliance with the applicable environmental laws. State requirements are independent of the Federal environmental compliance process. However, all state requirements should have Federal statutory reference.

f. Federal institutional constraints are manifested through the Federal environmental protection statutes. Some of the statutes provide categorical protection for certain animal species or prohibit any activity in a particular area, i.e. the Endangered Species Act and cultural resource laws. Other laws

require a step-by-step approach to demonstrate compliance before an action may proceed. Careful evaluation of the proposed beneficial use activity against the requirements of environmental protection statutes is essential to ensure that the public does not perceive the action solely as a means of "disposing" of dredged material. Appropriate actions should be undertaken to mitigate for those unacceptable adverse environmental consequences. It is expected that beneficial use projects will result in environmental benefits that can offset adverse consequences of existing projects and future projects as well.

g. Laws in many states can be categorized as state zoning laws, where the state has taken express and direct control over land use. The states traditionally ceded a large portion of land use regulation to local government, but a reversal of that tradition is occurring. Over half the states have general land-use programs. Twenty-four of these programs establish state authority to coordinate major local land-use decisions, nine take the more traditional approach of mandatory local planning, and five are comprehensive state, programs involving land-use permits to deal directly with land development. Thirty eligible states participate in the CZMA, five had special laws to protect their shorelines, 22 had wetlands protection laws, 26 regulated development in the floodplain, and 13 had legislation to protect defined critical areas. Item 14 surveyed a 16-state sample of laws impacting on the planning and implementation of dredged material containment areas. These state laws generally fall into two major categories: those directed primarily toward environmental protection and those directed toward land-use control. The two categories are not mutually exclusive, and much crossover exists. The environmental laws are generally more recent and broader in scope in their emphasis on the preservation of land, water, and other natural resources. The land-use control laws reflect a trend away from local control and toward state regulation.

h. Land use plans developed by local, regional, or state management agencies may necessitate coordination for beneficial use activities such as borrow pit or land fill reclamation. Development of the beneficial use activity in conjunction with the appropriate planning agency normally satisfies the applicable land use requirements. State regulation of beneficial use activities is based in the Federal statutes. Activities occurring in state waters, to include the territorial sea, or in approved coastal zones may be regulated by the state under the provisions of the CWA or Coastal Zone Management Act (CZMA). Depending upon the nature and location of the proposed activity, certifications and/or consistency determinations may be required.

i. Through the provisions of the CWA and CZMA, states have the authority to regulate most beneficial use activities. State procedural requirements are independent of Federal compliance. Although the CE and most states have established joint evaluation procedures, about 30 days should be added to the compliance process to accommodate state review. States may, as a prerequisite to the required certifications, add conditions or controls to the proposed beneficial use activity. Such conditions or controls should be directly related to state water quality standards or coastal zone program.

State fish and game agencies under the authority of the Fish and Wildlife Coordination Act of 1958 (FWCA) may recommend conditions to protect environmental resources of concern, i.e., oyster reefs, shrimp, wetlands, or other sensitive resources. Further, state-listed endangered species not on the Federal list will be of concern to state fish and game agencies. Coordination with state agencies is accomplished through the public notification process.

1-5. References. References which can provide guidance leading to this manual are:

a. 16 U.S.C. 661, Public Law 85-624, Fish and Wildlife Coordination Act of 1958.

b. 42 U.S.C. 4321 et seq., Public Law 91-190, National Environmental Policy Act.

c. 33 U.S.C. 1251 et seq., Public Law 92-500, Clean Water Act of 1977.

d. 33 U.S.C. 1401 et seq., Public Law 92-532, Marine Protection, Research, and Sanctuaries Act of 1972.

e. 16 U.S.C. 1451, Public Law 92-583, Coastal Zone Management Act.

f. 33 U.S.C. 426, Public Law 94-587, Water Resources Development Act of 1976.

g. Executive Order 11988, May 1977, Floodplain Management.

h. ER 1105-2-35, Public Involvement and Coordination.

i. ER 1105-2-40, Economic Considerations (CH 1-3).

j. ER 1105-2-50, Environmental Resources (CH 1-2).

k. ER 1110-2-400, Design of Recreation Sites, and Areas and Facilities (CH 1).

l. ER 1165-2-27, Establishment of Wetlands Areas in Connection with Dredging.

m. EM 1110-2-1902, Stability of Earth and Rock Fill Dams.

n. EM 1110-2-2300, Earth and Rock-fill Dams; General Design and Construction Considerations.

o. EM 1110-2-5025, Dredging and Dredged Material Disposal.

p. EP 1165-2-1, Digest of Water Resources Policies and Authorities.

EM 1110-2-5026  
30 Jun 87

1-6. Bibliography. Bibliographic items are indicated throughout the manual by numbers (item 1, 2, etc.) that correspond to similarly numbered items in Appendix A. They are available on loan from the Technical Information Center, U. S. Army Engineer Waterways Experiment Station, P. O. Box 631, Vicksburg, MS 39180-0631.

1-7. Plant Material Recommendations. Appendix B contains detailed information for propagation and planting of 359 native and cultivated upland plant species and 105 wetland plant species that can be used for beneficial use development on dredged material and other disturbed sites.

1-8. Beneficial Use Case Studies. Over 1,300 examples of beneficial uses of dredged material in the United States and Canada are given by region in Appendix C. These indicate the extent to which dredged material is now being used as a resource and as a valuable commodity.

1-9. Plant and Animal Species. Common and scientific names of all plant and animal species are listed in Appendix D, by alphabetical order according to common name.

1-10. Definitions. A glossary of key environmental, dredging, and engineering terms follows the appendixes.