

CHAPTER 8

EROSION MITIGATION PROCESS

Shore erosion is one of the most significant problems facing owners of property fronting Lake Erie. A planning process to provide guidelines for addressing this problem includes:

1. Assessing the rate at which the Ohio lakeshore has receded, due to shore erosion, within historical time and the natural and cultural factors that have influenced those rates.
2. Identifying enforceable policies, legal authorities, and sources of financial and technical assistance to manage the effects of erosion.

Assessing Erosion

ODNR's Division of Geological Survey studied shore erosion in the eight Ohio counties bordering Lake Erie. Field studies and office studies examined the physical setting (e.g., shore stratigraphy, shore relief, shore orientation, beach width, nearshore slopes, nearshore sediment, wave climate) and the cultural setting (e.g., land use, shore protection structures) that influence the rate of recession, both through time and along shore. In addition, recession-line maps were prepared using charts from 1876-1877, aerial photographs from the late 1930s and aerial photographs from 1973. These recession-line maps are perhaps the most important aspect of the shore erosion studies because they show how the rate of shore recession changes through time and along shore. By relating these temporal and geographic changes in recession rates to changes observed in the physical and cultural setting, many of the temporal and geographic changes in shore recession can be explained.

As part of the OCMP, an updated recession line map will be used to designate Lake Erie coastal erosion areas. This map, like its predecessor, will also be used to study how changes in the physical and cultural setting affect recession rates. Using information from the earlier study and from the mapping done to designate Lake Erie coastal erosion areas, the State of Ohio will continue to assess the effects of shore erosion and to evaluate techniques for mitigating erosion and restoring areas adversely affected by erosion.

Additional studies of coastal erosion along the Ohio shore of Lake Erie are being conducted under a five-year (1991-1996) cooperative agreement between ODNR's Division of Geological Survey and the U.S. Geological Survey. A major thrust of the study will be to develop a sediment budget for the Ohio lakeshore by tying together many aspects of the geologic framework and coastal processes. Detailed maps of bluff stratigraphy, surficial sediment and subsurface sediment will provide a better picture of the type of sediment introduced to the lake each year and how it is dispersed. Detailed recession-line maps, building on mapping done to designate Lake Erie coastal erosion areas, will be used to better determine how much sediment is annually introduced to the lake.

The results of this five-year study will directly benefit the OCMP, in part by improving the knowledge base used to determine whether and how to mitigate site-specific erosion problems.

In addition to conducting and participating in shore erosion studies, the State of Ohio also cooperates closely with the U.S. Army Corps of Engineers (COE) on erosion control projects such as Section 103 Small Beach Erosion Projects, Section 111 Mitigation Studies, and other specifically authorized projects. Close cooperation and coordination between ODNR and COE will assure that these projects are consistent with the OCMP.

Process to Manage Effects of Erosion

Management of the effects of erosion is addressed through pertinent legal authorities and administrative processes described in the section on "Coastal Erosion and Flooding" in Chapter 5. These include: (1) designation of Lake Erie Coastal Erosion Areas (O.R.C. § 1506.06), (2) enforcement of a permit program for construction activities in coastal erosion areas (O.R.C. § 1506.07), (3) notification of buyers regarding coastal erosion area status of property being transferred (O.R.C. § 1506.06) and (4) administration of a permit system for erosion control measures (O.R.C. § 1507.04).

Technical and Financial Assistance

A variety of technical and financial assistance efforts are used to mitigate shore erosion problems. The purpose of the assistance is to provide the information compiled by the state to public and private lake shore property owners and to provide for public information, education and technical guidance on methods of shore protection.

The Division of Geological Survey is directed to identify Lake Erie coastal erosion areas, i.e., the land area anticipated to be lost by Lake Erie-related erosion within a 30-year period if no additional approved erosion control measures are completed within that time (O.R.C. § 1506.06(A)).

The Division of Engineering, ODNR, under O.R.C. § 1507.10, is authorized to prepare a shore erosion plan for Lake Erie (in cooperation with the Division of Geological Survey) and a shore erosion technical assistance program for county and local governments and for lakeshore property owners.

O.R.C. § 1506.07 provides that any county or municipal government may assume administration of the permit requirement if the local government adopts sufficient regulations. To assist local governments in developing such measures, ODNR can provide model ordinances and direct technical assistance to communities upon request.

In areas where erosion control structures are necessary to manage erosion impacts, ODNR will provide technical guidance on methods of shore protection and associated costs. Other technical

assistance efforts will take the form of individual consultations with property owners and local governments on matters relating to shore protection and coastal processes.

Limited financial assistance for erosion control is available through ODNR (O.R.C. § 1507.06). The funds are derived from the granting of leases and the royalties paid pursuant to O.R.C. § 1505.07 for the removal of sand, gravel, stone, gas, salt and other minerals from and from under the bed of Lake Erie. The state, acting through ODNR, may use these funds to construct and maintain projects to prevent, correct and arrest erosion of public property along the Ohio shore of Lake Erie by entering into agreements with counties, municipal corporations, townships, park boards and conservancy districts or any other state or division. The cost shall be prorated on the basis of two-thirds of the cost to the state and one-third of the cost to the benefiting public agency. O.R.C. § 1507.06 does not authorize the State of Ohio to deal directly with private property owners in setting up an erosion control project.

The State of Ohio, through ODNR, encourages and assists local governments and lakeshore residents in establishing conservancy districts for erosion control. Communities interested in establishing conservancy districts will be given technical assistance. Funds from the Ohio Coastal Management Assistance Grant Program may be available to conservancy districts for the purposes of developing erosion control plans and projects. Such studies may include, but will not be limited to, feasibility studies for methods of control, research for overcoming economic and technical impediments to beach nourishment, and incorporation of vegetation into control projects. State financial assistance is available to conservancy districts for erosion control from the special account pursuant to O.R.C. § 1507.06 as described above. It is the policy of ODNR to give financial assistance for operating expenses to conservancy districts when they are first being established. Such "seed money" could be used to organize the district and initiate the plans for controlling erosion.

The Ohio Sea Grant Program provides technical assistance to lakeshore property owners on controlling shore erosion. Sea Grant has four extension agents specializing in Lake Erie matters. These agents work with contractors and lakeshore property owners to educate them about erosion control measures and provide other technical information.

Pursuant to Section 103 of the Rivers and Harbors Act of 1962, as amended, the COE may provide financial and technical assistance to state and local governments to control beach and shore erosion on public property. Unlike many COE projects, Section 103 projects do not need specific authorization from Congress. However, each project must be engineeringly sound, environmentally acceptable and economically justified. The COE designs and constructs the project, and the local government must furnish evidence of legal authorization, financial capability and willingness to provide all necessary local participation and cooperation. The determination of local cost is based upon the value of the property being protected and the use of the property by the public. Federal participation cannot exceed \$2,000,000, or 50 percent of the project costs, whichever is lower.