



# Pennsylvania's Bluff Recession and Setback Program

## *Shoreline Erosion and Bluff Recession Are Facts Of Life along Pennsylvania's Lake Erie Coast*

### FACT SHEET

Pennsylvania Sea Grant, as part of the National Sea Grant Program, promotes efforts to improve the environmental and economic health of Pennsylvania's coastlines.

Focusing on the Lake Erie and Delaware River watersheds, Pennsylvania Sea Grant works to increase public awareness of coastal environmental and economic issues through extension, communication, applied research, and education activities.

The National Oceanic and Atmospheric Administration (NOAA) administers the National Sea Grant College Program. Pennsylvania Sea Grant is also supported by the Pennsylvania State University and the Commonwealth of Pennsylvania.

**Pennsylvania Sea Grant  
Penn State Erie**  
5091 Station Road  
Erie, PA 16563  
Tel. 814-898-6420  
Fax 814-898-6462

**Delaware Estuary Office**  
1450 Edgmont Avenue  
Suite 150  
Chester, PA 19013-3934  
Tel. 215-806-0894  
Fax 501-637-2923



Shoreline erosion and bluff recession are the most significant Lake Erie coastal hazards. Various studies, notably those developed by the U.S. Army Corps of Engineers (Buffalo District) and the Commonwealth of Pennsylvania through its Coastal Zone Management Program (CZM), have assessed shoreline damage statistics and the costs of protection. Shore structure inventories have also been prepared. These documents provide useful information for measuring losses and recording efforts made to mitigate damage. They also demonstrate the need for a comprehensive planning process to deal with the long-term effects of shoreline erosion and bluff recession, and any structural or nonstructural mitigation efforts.

The geological processes along the Lake Erie shoreline are continuous, but rates of change are affected by factors such as the amount of water in the lake (lake levels), storm impacts, land use changes and the physical structure of the bluffs, which may rise close to 200 ft. above the lake. The glaciers that carved out the Great Lakes basin were also responsible for the sediments that make up the bluffs. These unconsolidated (loose) glacial sediments include sand, gravel and clay, all of which are very vulnerable to erosion. In some areas along the Lake Erie coast, the bluffs have a bottom layer of exposed bedrock or shale.

Erosion of beach materials and the undercutting of bluffs by wave attack lead to bluff instability. Slumping and mass wasting will likely result, with major property losses of land and structures. Erosion of the bluffs may be accelerated by groundwater seepage, surface water runoff, and human activity or changes in land use that would alter the hydrology or vegetation on a site.

The Bluff Recession and Setback Act (BRSA) was passed in 1980 and requires that new residential, commercial and industrial structures will be constructed outside of designated Bluff Recession Hazard Areas (BRHA), determined to be hazardous because of active bluff recession. Such setbacks protect the health and safety of residents, as well as property investments. The statutory authority of the act only applies to Lake Erie.

Regulations were developed in 1980 to implement the BRSA and control the location of new structures and improvements to existing structures located in the bluff recession hazard area. Coastal municipalities with designated active bluff recession areas were required to enact local ordinances. Property owners disagreeing with the hazard area determination were given an opportunity to appeal the designation.

Minimum setback distances are determined by estimating the economic life of a structure and multiplying the result by the local bluff recession rate per year (in feet). Minimums are set for residential, commercial or industrial structures. Variances to the regulations and ordinances for structures and activities subject to setback requirements are narrowly limited. The bluff face is included in the BRHA and is considered to be a no-build area.

There are eight municipalities along Pennsylvania's Lake Erie coast that have designated bluff recession hazard areas and enacted ordinances. Many of the municipalities amended existing ordinances to incorporate the setback requirements. CZM developed a model ordinance for municipalities to follow and adopt if needed. CZM continues to provide financial and technical assistance for local administration and enforcement of the BRSA.

CZM uses a system of control point monuments, global positioning system technology (GPS), regular physical inspection, low-level overflights, aerial photography and laser mapping to monitor bluff recession rates. A geographic information system (GIS) is used to store and manage all related bluff information. CZM offers technical advice to bluff property owners at no cost in an effort to fully inform residents of the dynamic processes of bluff recession and shoreline erosion. Structural shoreline stabilization, biotechnical slope restoration, vegetation management, and site best management practices are all activities property owners may undertake to slow the rate of bluff recession. Beyond local building permits, other construction activities in bluff areas may require additional permits from DEP's Northwest Regional Office or the Erie County Conservation District if there are impacts on wetlands and watercourses. Encroachments in the area between the ordinary high water mark (573.4 ft.) and ordinary low water mark (569.2 ft.) will require a joint state and federal permit. Construction below the low water mark requires a submerged lands license from DEP, since public trust lands owned by the Commonwealth will be impacted.

The BRSA seeks to protect property owners and their investment decisions, prevent damage to utility lines, and eliminate hazards created by the collapse of structures into Lake Erie. Enforcement of the Act is no guarantee against the fluctuating lake levels, or surface and groundwater flows resulting from high rates of precipitation or specific storm events

Pennsylvania Sea Grant and CZM are working in partnership to inform bluff property owners of their risks from coastal hazards and to promote a scientific understanding of the geologic processes at work. For more information, contact CZM staff directly (814) 332-6942, or write to CZM at the Northwest Regional Office of DEP, 230 Chestnut Street, Meadville, PA 16335-3481. The fax number is (814) 332-6121. The central office number in Harrisburg is (717) 787-5259. Basic information on coastal processes is available on DEP's web site ([www.dep.state.pa.us](http://www.dep.state.pa.us)); choose Subjects, then Coastal Zone Management.

*This fact sheet was produced in conjunction with CZM.*

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