

**Study to Tentatively Designate Bluff Recession Hazard Areas**

**Pennsylvania Department of Environmental Protection**

**November 2004**

# **Tentative Bluff Recession Hazard Area Designations**

**Pennsylvania Department of Environmental Protection  
Water Planning Office  
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**Bluff Recession and Setback Act  
Tentative Designations of Bluff Recession Hazard Areas  
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**BLUFF RECESSION AND SETBACK ACT**

The Bluff Recession and Setback Act (BRSA), enacted during the 1980 session of the Pennsylvania legislature, provides for the establishment of setbacks to regulate new building construction in bluff recession hazard areas (BRHAs). The Act was a response to historic catastrophic loss of homes to recession of bluff faces along Lake Erie.

One of the objectives of the Act is to identify areas subject to bluff recession which create a significant threat to structures and safety and to plan and regulate building in areas of identified hazards. Under the statutory scheme of the BRSA, DEP provides technical analysis identifying areas prone to bluff recession, the EQB designates the Bluff Recession Hazard Areas and municipalities adopt ordinances incorporating setbacks and building requirements to regulate building and development in designated bluff recession hazard areas. The Act provides the Department of Environmental Protection (DEP) with some powers, but its primary responsibility is to oversee the municipalities' implementation of the Act.

The Act defines a bluff as "Any high bank or bold headland with a broad, precipitous cliff face, overlooking a lake." A bluff recession hazard area is defined in Section 3 of the BRSA as "An area or zone where the rate of progressive bluff recession creates a substantial threat to the safety or stability of nearby or future structures or utility facilities."

The Act provides DEP the authority to conduct studies to identify BRHAs. DEP makes recommendations for designating BRHAs, while the Environmental Quality Board (EQB) has the ultimate responsibility for the designation of hazard areas based upon the Department's recommendations and municipal comments.

The current designations of BRHAs, codified at 25 Pa. Code § 85.26, are based on a 1975 study titled *Shoreline Erosion and Flooding – Erie County*.

**PETITION TO CLARIFY BLUFF RECESSION HAZARD AREAS**

In July 2001, Millcreek Township petitioned the EQB, requesting clarification of the extent and location of BRHAs within the township. Since the last study conducted regarding BRHAs occurred in 1975, DEP agreed to conduct an updated study of the entire coastline.

## STUDY - TENTATIVE DESIGNATION OF BLUFF RECESSION HAZARD AREAS

Pursuant to Section 4 of the Act, DEP's studies and other information utilized to recommend bluff recession hazard areas included:

1. geographic location of potential hazard areas,
2. evaluation of the bluff recession hazard in relation to geophysical processes such as recession and erosion-related phenomena and examination of the causative factors,
3. review of existing and potential damage, and
4. review of historical recession rate.

DEP also evaluated historical and other data to determine which areas of the bluffs showed sufficient indications of recession or potential recession to warrant designation as a bluff recession hazard area creating "a substantial threat to the safety or stability of nearby or future structures or utility facilities."

DEP utilized the following sources of data to conduct its study in order to make recommendations to tentatively designate BRHAs: a report contracted through Wetland and Coastal Resources, Inc; high altitude aerial photography; low altitude oblique-angle color prints; and control point measurement data.

### *Wetland and Coastal Resources Report*

Following a Request for Proposals, Wetland and Coastal Resources (WCR) was awarded a contract in late December 2001 for a study of bluff recession along the coast of Lake Erie, the loss of material along bluff faces caused by the direct or indirect action by one or a combination of groundwater seepage, water currents, wind generated water waves, or high water levels. The study included the identification of bluff recession features and the measurement of the rate of bluff recession over time, from aerial photographs. WCR's final report was submitted in June 2003.

### *High Altitude Aerial Photography*

DEP utilized high altitude aerial photographs of the Erie shoreline, dating as far back as 1938 when available, which WCR electronically oriented and analyzed to determine movement of bluff lines. In this analysis, sampling points ("transects") on maps were marked at 100 ft. intervals, and bluffline recession at each transect was measured with the aid of a stereoscope.

### *Low Altitude Oblique-Angle Color Prints*

For transect locations where analysis of the high altitude aerial photography did not indicate measurable recession of the bluffline, low altitude oblique angle color prints were reviewed. These prints were inspected by DEP for the presence of areas that

displayed signs of recession, such as loss of material along the bluff face, that could create a substantial threat to the safety or stability of nearby or future structures or utility facilities.

#### *Control Point Measurement Data*

The Department monitors 129 established points along the Erie shoreline. For the most part, these control points are fixed monuments (steel pins) in the ground or semi-permanent artifacts such as existing utility poles. Department staff make direct measurements to the bluff line from these control points. Contractors have assisted the Department in the past to measure recession rates from these control points.

#### *METHODOLOGY TO IDENTIFY THE BEGINNING OR END OF A BRHA*

On photos depicting WCR's analysis of high altitude photography, transect locations were utilized to identify the beginning/end of a BRHA. If analysis of a transect indicated a transition out of a BRHA, the BRHA was ended at the next transect. In instances where a bluff ended between transects, the BRHA was extended to the next transect, to ensure the diagrams captured the end of the bluff.

#### *STUDY – PRESENTATION OF RESULTS*

Following review of the data, the Department documented its analysis and the recommendations for BRHAs in a study report. The basic presentation utilizes topographic maps to indicate geographic locations of BRHAs.

To help refine BRHA identification in its draft study, the Department indicated its tentative recommendations on the high altitude aerial photographs analyzed by WCR. The Department also provided tables summarizing control point measurement data and copies of WCR's report.

Because of the large number of low altitude oblique-angle color prints, the Department did not reproduce them, but the originals will be at the Northwest Regional Office, available for review in Meadville upon request.

#### *NEXT STEPS*

The study and recommendations will be submitted to affected municipalities for review and comment. DEP will review comments submitted by the affected municipalities and consider if changes need to be made to the proposed tentative designations. Upon completion, DEP will present recommendations concerning tentative designations to the EQB. EQB will consider DEP's recommendations and municipal comments, and make a decision as to whether to hold public hearings and move forward with regulatory changes.

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