**Development of Geo-Indicators for Assessment of Coastal Bluff Ecosystems**

**along Lake Michigan for Regional Integrated Bluff Management (IBM)**

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Abstract

Coastal bluffs along the Great Lakes are a sensitive landscape feature, often containing both vital shoreline habitat at the bluff face and toe and urbanized development at the crest. Sediments are the major component in the coastal bluff environment (CBE). Due to a periodic bluff failure and recession, changes in beach width, and the nature of the nearshore environment, movements of sediment are constantly altered by natural climate factors and anthropogenic coastal development. As a result the nature of coastal bluff ecosystem is in a state of constant change. Proper management of coastal bluffs requires sound science-based knowledge of the factors influencing bluff recession. Three sets of geo-indicators are being used to parameterize the CBE, quantify coastal processes with a regional sediment budget, and characterize the health or function services of the CBE. We present geo-indictors derived from data collected and compiled at both developed (e.g., Oak Creek, North Port Washington) and undeveloped (e.g., Manitowoc County, Lion’s Den County Park) sites. These geo-indicators will help coastal managers effectively assess the health of the coastal bluff ecosystem for regional integrated bluff management (IBM) along Lake Michigan.