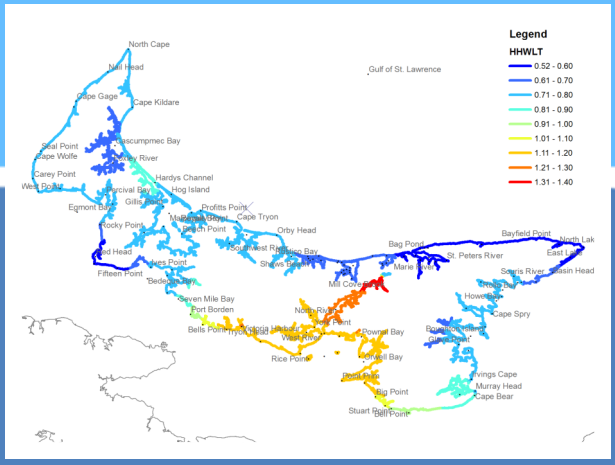
PROJECT Geomorphic Shoreline Classification of PEI



PROJECT DESCRIPTION

Coldwater Consulting Ltd. was contracted by the Prince Edward island Department of Environment, Energy and Forestry (DEEF) to develop a classification and sensitivity mapping for the entire PEI shoreline. Geomorphic shoreline classification (GMSC) involves the description (through both maps and databases) of the location and extent of different shoreline types. Resulting datasets are typically used by resource planners and managers to aid them in evaluating shoreline vulnerability and in delineating coastal hazards as well as for public consumption in improving general understanding of the coastal zone.

PROJECT APPROACH

The development of a GMSC system is a key step in being able to assess the effects of coastal hazards on the Island's shorelines. Coastal hazards include: coastal flooding, coastal erosion, and damage to coastal ecosystems. All of these hazards are influenced by the combined actions of sea level rise, tides, storm surge and wave action. The GMSC dataset provides an inventory that can be interpreted to assess these processes. A GMSC dataset is an essential input to any climate change vulnerability assessment.

Rather than group all shorelines on the basis of a somewhat arbitrary distinction between 'exposed' and 'sheltered' conditions, Coldwater developed and implemented an approach whereby shoreline exposure was assessed as a key, integral, defining parameter. Each shoreline segment is associated with several characteristics that quantify its exposure to the elements (e.g., open water fetch, nearshore water depth, offshore wave height, tidal range, storm surge). Data to quantify these processes was extracted from regional met-ocean datasets. This linkage between the GMSC and the met-ocean conditions creates a unique database of the response of the Island's coasts to varying conditions. At the same time, this GMSC can readily be updated and refined as additional met-ocean or shoreline data becomes available.

The GMSC deliverable, developed in ESRI's ArcGIS environment, is based on shore polygons and contains a wide range of information from shoreline type, characteristic met-ocean conditions, and coastal structures to computed littoral transport values, and estimated vulnerability to coastal flooding and erosion.

CLIENT

PEI Dept. of Environment, Energy and Forestry
Charlottetown, PEI

LOCATION

Edward Island

DATE

2011

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