**Descriptive Text**

Human settlement in environments as dynamic as the coastal zone will inevitably lead to conflicts between the natural environment and the economic, social and cultural activities taking place within it. Managers and planners need to have access to better information about tidal rivers, coastal processes and dynamics to ensure informed decision making. This map provides a detailed description of the coastal zone, including the boundaries of coastal processes and historical rates of coastal change. A segmentation model was developed using ArcGIS® 10 to delineate and map the boundaries of the high tide, low tide, intertidal flat, and shallow zones within the Cumberland Basin and Southern Bight of the Minas Basin in the Bay of Fundy. Coastal processes and shoreline changes were mapped using a YUMA table. In areas where it was unsafe to conduct shoreline surveys, aerial imagery was used. Segments of the shoreline were characterized and categorized using a modified version of the Shoreline Stability Index (SSI) for shoreline stability, presence or absence of cliffs (consolidated and unconsolidated) and anthropogenic structures.

Map Notes

GIS shoreline database produced by Dinkla van Proosdij and Barbara Pietersma-Perron of Saint Mary's University, Maritime Provinces Spatial Analysis Research Centre. Data collected from June 19, 2010 to July 6, 2011. Cartography and reproduction by Angie Eiler of the Nova Scotia Department of Natural Resources, Geomatics Services Section, 2011-12. The maps were developed using ArcGIS® 10.

Universal Transverse Mercator Projection (UTM), Zone 20, Central Meridian 63°0' West, North American Datum (NAD) 1983 Canadian Spatial Reference System (CSRS) 98.

Shore Zone Characterization Map of the Nappan Area, Cumberland County, Nova Scotia

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Scale: 1:10 000

0 1 km

Halifax, Nova Scotia
2012

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**Nova Scotia Department of Natural Resources
Mineral Resources Branch
Open File Map ME 2012-021****Selected References**

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Webster, T., McGuigan, K. and MacDonald, C. 2011: Lidar processing and flood risk mapping for coastal areas in the District of Lunenburg, Town and District of Yarmouth, Amherst, County Cumberland, Wolfville and Windsor; Atlantic Climate Adaptation Solutions Association, 130 p.

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Acknowledgments

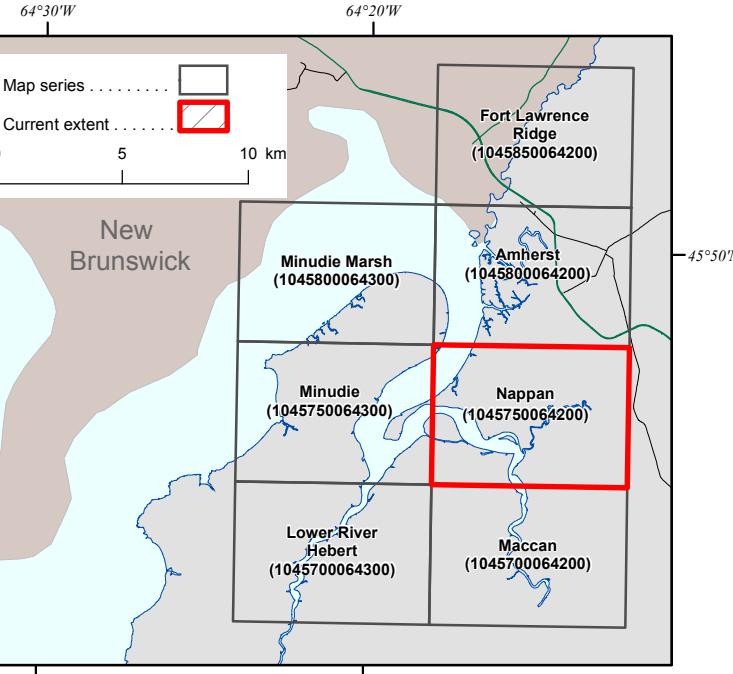
This project is part of the Atlantic Climate Adaptation Solutions Association (ACASA) project, a joint undertaking between the Atlantic Provinces, Natural Resources Canada, regional municipalities and other partners. It was made possible with funding from the Province of Nova Scotia and federal support from Natural Resources Canada's Regional Adaptation Collaborative Program.

Disclaimer

The information on this map may have come from a variety of government and non-government sources. The Nova Scotia Department of Natural Resources and partners of the Atlantic Climate Adaptation Solutions Association do not assume any liability for errors that may occur. This map is intended for use at the published scale of 1:10 000.

Recommended Citation

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Series or Map Name
Open File Map ME 2012-021

June 28, 2012

LEGEND*

Shore Zones	
Backshore	
Highly stable	.....
Partially stable	.....
Not stable	.....
Unconsolidated over bedrock	.....
Other (bulkhead, causeway, road, wharf)	.....
Dyke	.....
Foreshore (upper foreshore, middle foreshore, lower foreshore)	
Cliffed, highly stable	.....
Cliffed, partially stable	.....
Cliffed, not stable	.....
Foreshore and Nearshore Habitats	
High salt marsh	.....
Low salt marsh	.....
Restored marsh	.....
Cobble	.....
Gravel	.....
Sand	.....
Mud	.....
Outcrop	.....
Platform	.....

Symbols

Nonagricultural aboiteau or culvert	.....
Agricultural aboiteau	.....
Shore protection or armouring	.....
Wharf	.....
End of ACASA study area	.....
Rock in water	.....
Building point location	.....
Arterial highway	.....
Trunk highway	.....
Collector highway	.....
Hard surface road	.....
Loose surface/resource access road	.....
Trail, footpath, cart track	.....
Railway (active, inactive)	.....
Coastline	.....
River, stream	.....
County boundary	.....
Transmission line (multi, single line)	.....
Building footprint	.....
Wetland	.....
Lake/ocean	.....
Incorporated marsh body	.....

* Note: Legend is for map series. All units and symbols may not appear on each map.

Explanation of Terms used in the Legend

Backshore: the upper limit of high tide or storm wave levels (higher high water level), which is at an elevation of 7.57 m (Canadian Geodetic Vertical Datum of 1928 (CGV28), last elevation vertical datum) in the Southern Bight of the Minas Basin and 7.50 m (CGV28) in the Cumberland Basin.

Foreshore: area between high and low tides which can be divided into **upper foreshore** (between the backshore and high marsh, close to the backshore), **middle foreshore** (between high and low marsh) and **lower foreshore** (the furthest extent of low marsh). The foreshore can be either ramped or cliffed where salt marsh is present.

• **ramped:** salt marsh that intersects the intertidal flat as a gently sloping vegetated surface.

• **cliffed:** salt marsh that intersects the intertidal flat as a cliff >30 cm and a slope >30°.

• **highly stable:** no visible signs of erosion.

• **partially stable:** visible signs of erosion including cliffing, however very little to no vegetation slumping away from the shoreline.

• **not stable:** significant visible signs of erosion including cliffing, with vegetation slumping away from the shoreline.

The foreshore and nearshore habitats are defined as follow:

• **high salt marsh:** a marsh covered only by highest high tides and storms with some soil development, organic build up and a high diversity of plant species dominated by grasses and shrubs (Owens 1994).

• **low salt marsh:** a marsh covered by all moderate and high tides and characterized by little soil development, low species diversity, hydrophytic plants and often herbaceous cover (Owens 1994).

• **restored marsh:** a site where the natural hydrology has been restored, enabling the re-establishment of high salt marsh and floodplain wetland habitat conditions.

• **cobble:** a rock fragment larger than a pebble and smaller than a boulder, being somewhat rounded and smooth, specifically as coarse of transport (Bates and Jackson 1980) (6-256 cm, Wentworth 1922).

• **gravel:** an unconsolidated, natural accumulation of rounded rock fragments, resulting from erosion, consisting predominantly of particles larger than sand (diam. > 2 mm) (Bates and Jackson 1980).

• **sand:** a rock fragment or rock particle smaller than a granule and larger than a coarse silt grain, or that at the lower limit of visibility of an individual particle and that the head of a small wooden match (Bates and Jackson, 1980) (0.0625-2 mm, Wentworth, 1922).

• **mulch:** a layer of clay-sized earth material with the consistency ranging from semiliquid to soft plastic; a wet, soft soil or earthy mass, mire or sludge; an unconsolidated sediment consisting of clay and/or silt, together with other dimensions (sand), mixed with water, without concretion as to composition (Bates and Jackson, 1980) (0.0625-2 mm, Wentworth, 1922).

• **outcrop:** a term to describe a slope (<40°) surface extending seaward from the backshore composed of bedrock.

• **platform:** a horizontal or gently sloping surface (<10°) extending seaward from the intertidal zone, formed on rocky or rock-cliff shores by wave impact and erosion. The surface may be bare or littered with rock.

• **shore protection or armouring:** any material (rock, wood, car bodies) thrown together irregularly and fitted together to prevent erosion by waves or currents and thereby preserving the surface, slope or underlying structure (i.e. rip rap) (Owens, 1994).