

# Huron County Extreme Lake Levels Integrated Assessment

November 17, 2016 Webinar  
Lynne Peterson, IA project lead;  
Matthew Hoy, executive director,  
Lake Huron Centre for Coastal Conservation

Photo by Dr. Wayne Caldwell

## Huron County Extreme Lake Levels Integrated Assessment



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# *Huron County IA Process*

- A September 2015 **feasibility report**
- **IA Phase 1** – November 2015 to May 2016.
  - Full day workshop with 45 Water Protection Steering Committee (WPSC) members and additional stakeholders.
  - Phase I research report completed May 3, 2016.
- **IA Phase 2** – May to November 2016.
  - Four public presentations of Phase 1 research for input.
  - Phone, email and in-person discussions of options.
  - Final report with recommendations October 30, 2016.
- **Next Steps** – to April 2017
  - Submit final report to decision-makers for their consideration of recommendations.
  - Ensure IA research and recommendations locally available.
  - Participate in IA Phase 3 by Graham Sustainability Institute.

# *Study Participants*

## **Research team:**

- Project lead: Lynne Peterson, former Ontario Public Service (OPS) senior executive
- Dr. Agnes Richards, University of Toronto adjunct professor and Environment Canada scientist
- Meghan Allerton, water science graduate student, University of Toronto, Trent University
- Helen MacRae, former municipal chief administrative officer
- Tanya Wanio, former OPS senior executive
- Kate Procter, writer, editor, Huron County farmer

## **Local contributors:**

**Lake Huron Centre for Coastal Conservation:** Geoff Peach, Coastal Resources Manager; Matthew Hoy, executive director; Erinn Lawrie, stewardship coordinator

**Ausable Bayfield Conservation Authority:** Alec Scott, Water and Planning Manager; Geoff Cade, Supervisor of Water and Planning

**Maitland Valley Conservation Authority:** Stephen Jackson, Flood and Erosion Safety Services Coordinator; Phil Beard, General Manager

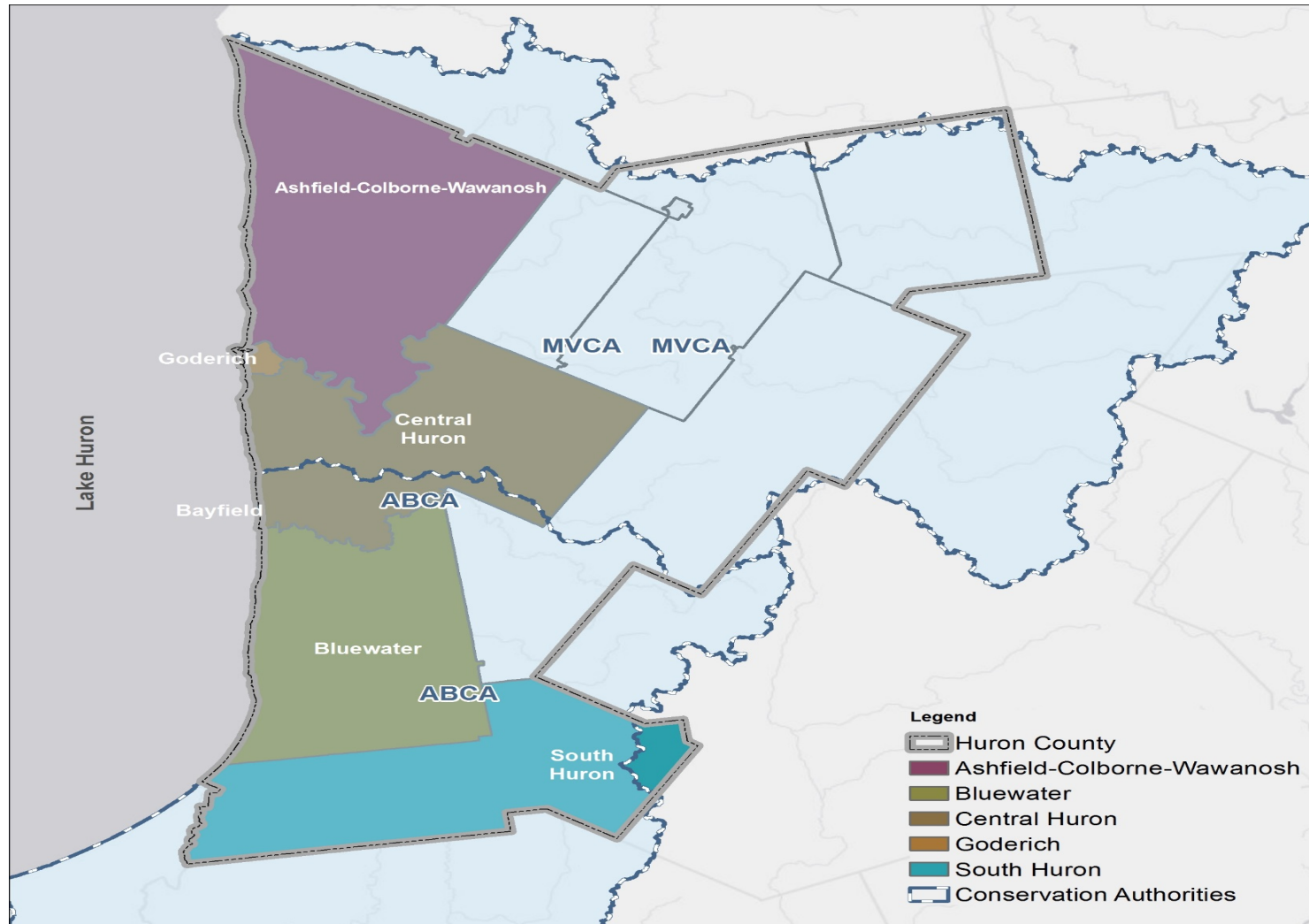
**Huron County Planning and Development Department:** Suzanna Reid, Planner; Scott Toussaw, Manager; Nina Reynolds, administrative assistant

**Ashfield-Colborne Lakefront Association:** Roger Watt

**Bluewater Shoreline Residents' Association:** Sue Haskett and Jan Purvis

**Water Protection Steering Committee:** Chair Central Huron Mayor, His Worship Jim Ginn

# Huron County, Ontario, Canada





## *Huron County: where farm meets lake*

- Population 60,000 + 10,000 in summer.  
Agriculture, tourism, manufacturing, shipping.
- 100 km (62 miles) of Lake Huron shoreline includes:
  - Dunes and beaches attracting recreation and tourism; two Provincial Parks.
  - Harbours and marinas requiring dredging and infrastructure capable of handling recreational boating and commercial shipping.
  - Goderich harbour, the only deep water port on the eastern shore.
  - World's largest productive salt mine.
  - 50 km (31 miles) of steep, majestic bluffs with stunning sunset views.

# *Lake Levels Activities in Huron*

## MVCA:

- on-line hazard land mapping; flood and erosion alerts
- emergency planning exercises
- upcoming public education strategy

## ABCA:

- on-line flood and erosion alerts
- updating Shoreline Management Plan

## LHCCC

- Bluff Stewardship Guide, Coastal Bluff Geo-hazard checklist
- Extreme Lake Levels Position Statement
- upcoming Coastal Action Plan

## WPSC

- advisory committee for this Integrated Assessment study
- 2000<sup>th</sup> stewardship/conservation grant celebrated

## Town of Goderich

- Waterfront Master Plan underway in 2016

# *Huron IA lake level objectives*

1. Enhance public awareness.
2. Complement work of conservation authorities and municipalities.
3. Build on the conservation and stewardship activities of the Lake Huron Centre for Coastal Conservation.
4. Identify local economic development opportunities.
5. Identify municipal infrastructure issues and challenges.
6. Identify potential federal and provincial legislation, funding programs and tools that could be useful to Huron County governments, organizations and residents for actions to adapt to extreme lake level impacts.

# Lake Levels highs and lows

- Water levels naturally fluctuate over time, driven primarily by climatic factors related to precipitation and evaporation
- Recorded accounts since 1918 show the range varies by about two metres
  - Low lake levels in 1930's, 1960's, 2000's
  - High lake levels in 1970's, 1980's, 1990's, 2014?
- 3 extreme levels scenarios in past 50 years:
  - Record lows in 1964 and January 2013
  - Record highs in 1985-1986



# *Huron County Climate Change impacts*

## *Dr. Robin Davidson-Arnott*

- Cyclical high and low levels will continue.
- Lake Huron has largest variation in high and low lake levels.
- Ice cover has already decreased and will decrease further.
- Increase in number and severity of storms.
- Larger volumes of sediment transport, increase in down-cutting of nearshore and bluff toes = bluff erosion, impacts on dynamics of sandy beach and dune systems.
- Increase of 2-7 degrees C. in average annual temperatures by end of century = longer recreational and shipping season.
- Most increase in winter temperatures, more extreme heat alerts in summer.
- Impact on lake effect snowfall, winter ice cover and fish habitats



Photo: Lake Huron Centre for Coastal Conservation

# *Pros and cons of highs and lows*

## Low lake water levels:

- Benefit tourism, camping and cottagers, with broad beaches and minimal bluff erosion.
- Harm commercial shipping, require costly dredging and marina impacts, adversely affect fish habitats, can threaten water quality and drinking water intakes.

## High lake water levels:

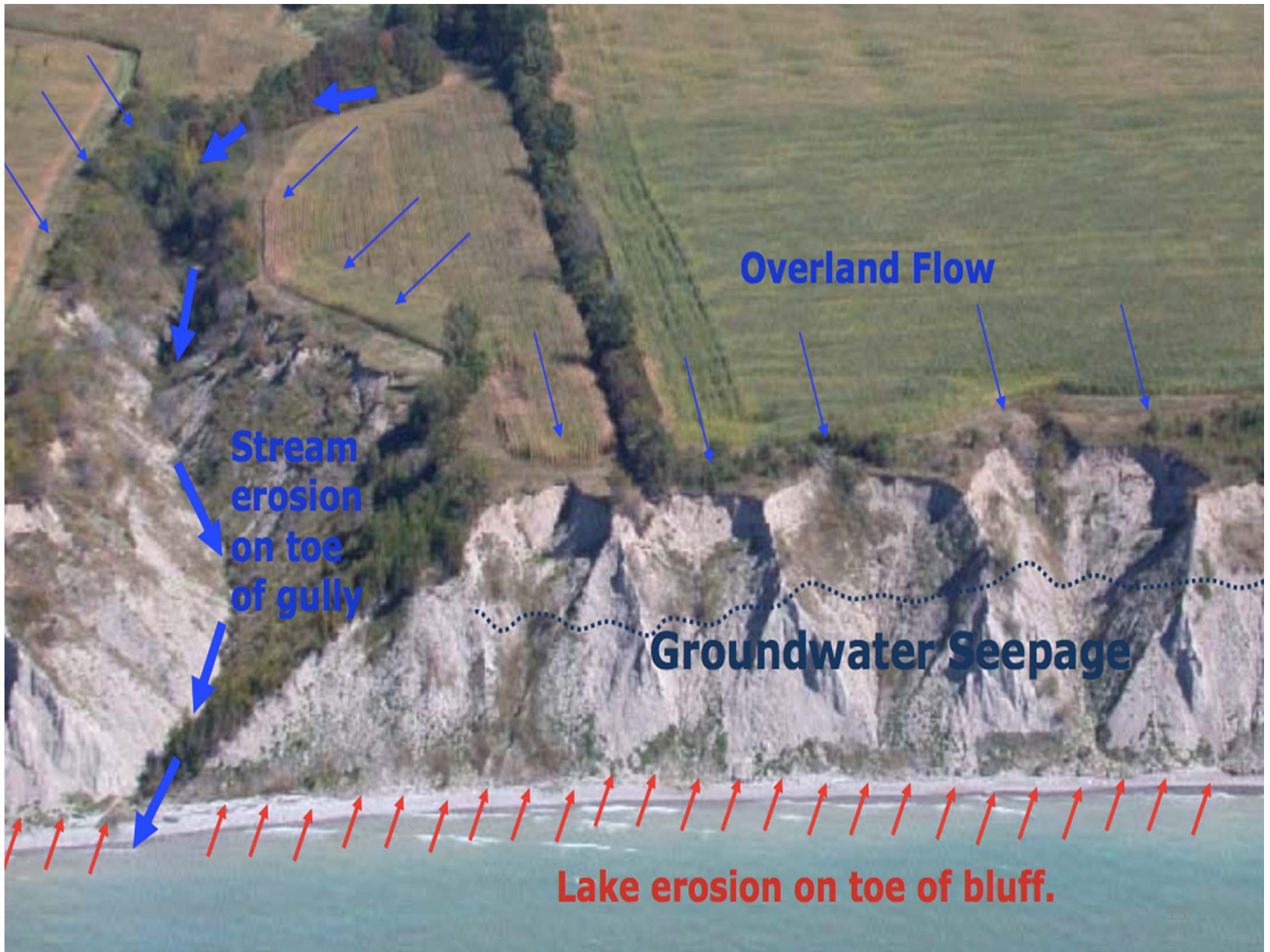
- Benefit commercial shipping, recreational boating, fishing.
- Increase bluff erosion and public safety concerns, can threaten road, bridge and other infrastructure.

# Huron County IA:

## 23 recommendations, 6 themes

Themes for policy and adaptive management action:

1. Pursue climate change funding opportunities for storm water management systems and municipal drains capable of dealing with 100 year storms.
2. Build on Ontario's strong policy framework.
3. Enhance emergency preparedness.
4. Engage/inform shoreline property owners.
5. Capitalize on local economic development opportunities.
6. Promote increased conservation and stewardship capacity.



# *Recommendations:*

## *1. Climate change funding opportunities*

Address/adapt to the ‘multiplier effect’ of climate change impacts on extreme lake levels by:

- Pursuing new federal climate change “disaster-readiness” community infrastructure funding.
- Pursue new provincial Climate Change Action Plan funding for infrastructure.
- Pursue Great Lakes Agricultural Stewardship Initiative (GLASI) funding to farmers for erosion control.
- Apply for 2018 National Disaster Mitigation Program funding (federal/provincial/municipal).
- WPSC funding program.

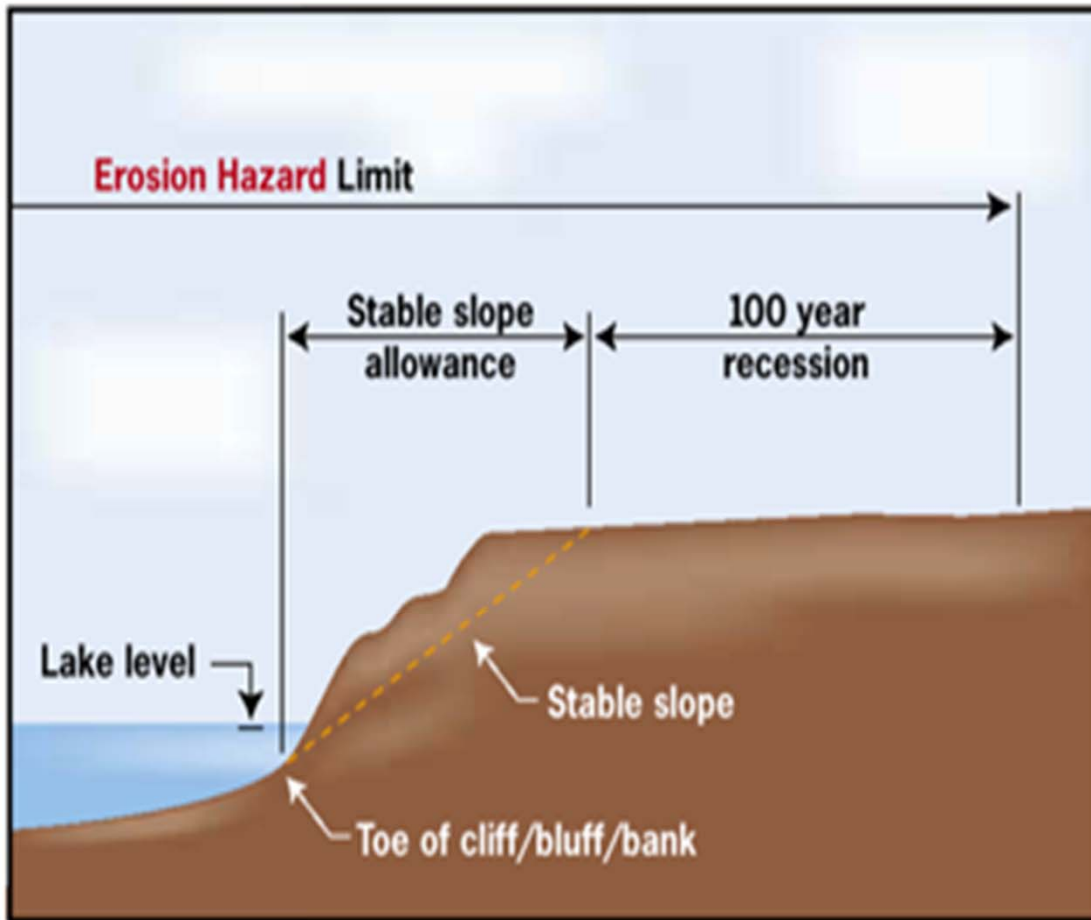
## *Recommendations:*

### *2. Build on Ontario's policy framework*

- Update and harmonize the two conservation authorities' 100 year erosion rate mapping and regulations for the 50 km of Lake Huron bluff.
- Establish shoreline tree protection by-laws (ACW bylaw a model).
- Provide fact sheet with land-use planning advice for residents wishing to relocate their cottage to a safer location back from the bluff.

## Natural Hazard Considerations for Lakeshore Development

- Erosion
- Flooding
- Dynamic Beach Hazards



WELCOME!

CLICK ANYWHERE TO START

Great Lakes – St. Lawrence River System and Large Inland Lakes

TECHNICAL GUIDES FOR FLOODING, EROSION AND DYNAMIC BEACHES  
in support of Natural Hazards Policies 3.1 of the Provincial Policy Statement (1997) of the Planning Act

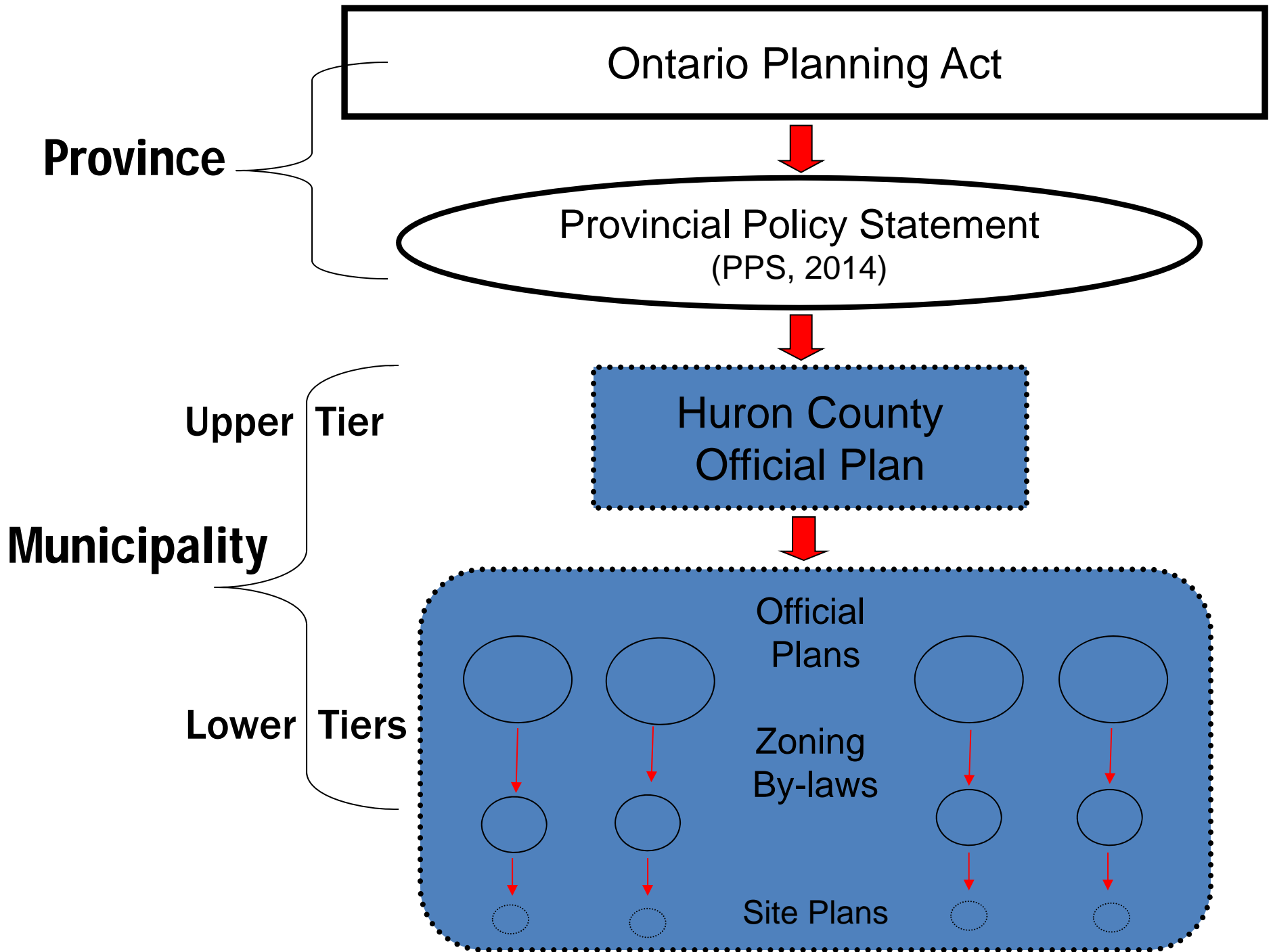
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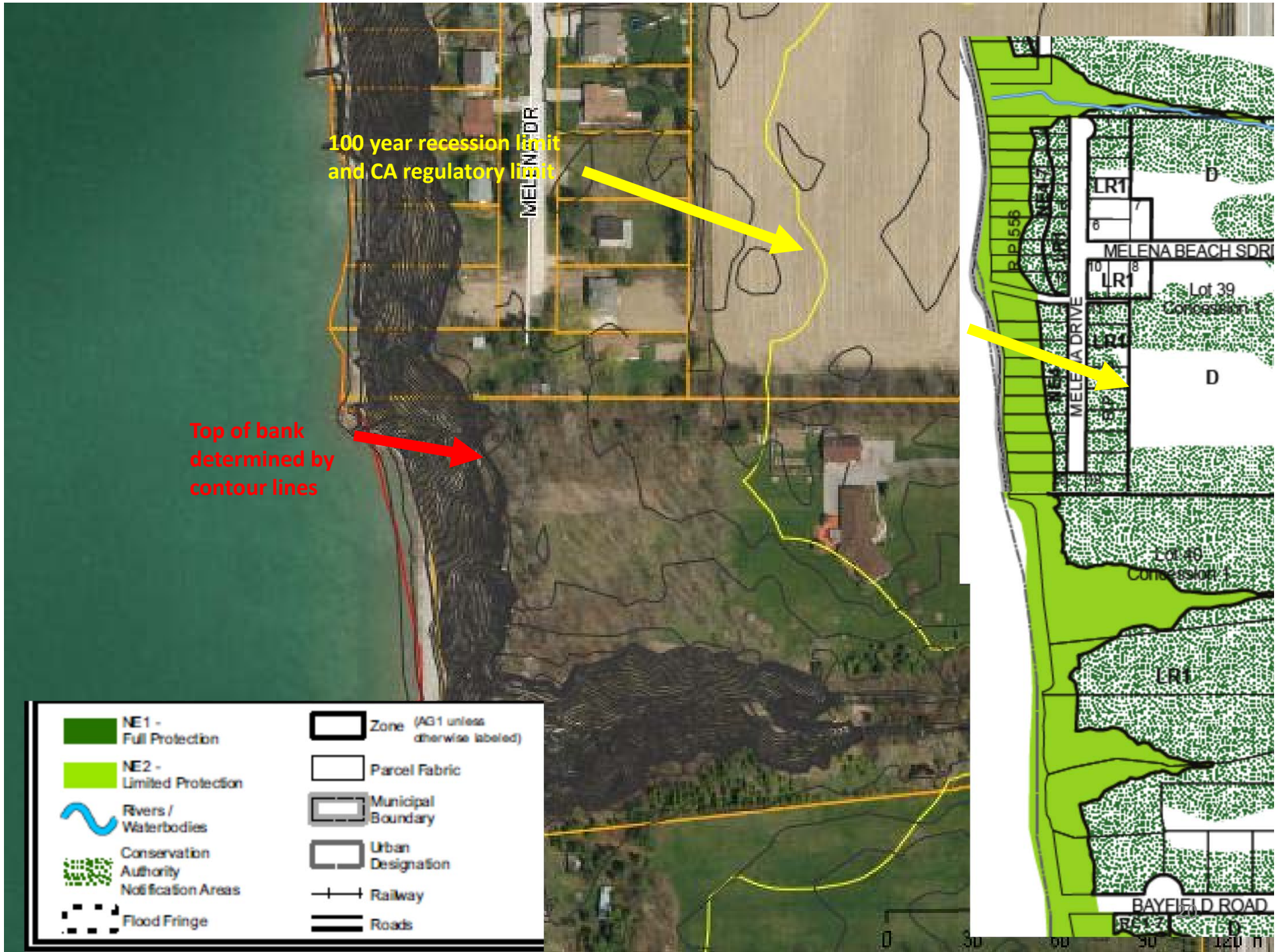
# 2014 Provincial Policy Statement

## *Climate Change Adaptation*

- planning authorities to consider and minimize the impacts of climate change that may increase the risk associated with natural hazards (3.1.3)
- development shall generally be directed to areas outside of hazardous lands adjacent to the shorelines of the Great Lakes (3.1.1)
- development and site alteration shall not be permitted within areas that would be rendered inaccessible during times of flooding hazards, erosion hazards and/or dynamic beach hazards (3.1.2)
- encourage green infrastructure (e.g., permeable surfaces) and promote storm water management best practices (1.6.2, 1.6.6.7)







## *Recommendations:*

### *3. Enhance emergency preparedness*

Municipalities, first responders, hospitals, utilities, shoreline property owners:

- Review infrastructure vulnerability, participate in bluff collapse disaster exercises, update municipal emergency plans.
- Notify shoreline property owners of
  - shoreline risks and hazards,
  - what to look for on their properties that may herald a slump,
  - what to do in the event of a slump.





Only one access





# *Most significant issue in Huron County: Engage/inform property owners*






The January 15 workshop attended by 45 WPSC and invited representatives of Huron County shoreline interests posed the following questions:

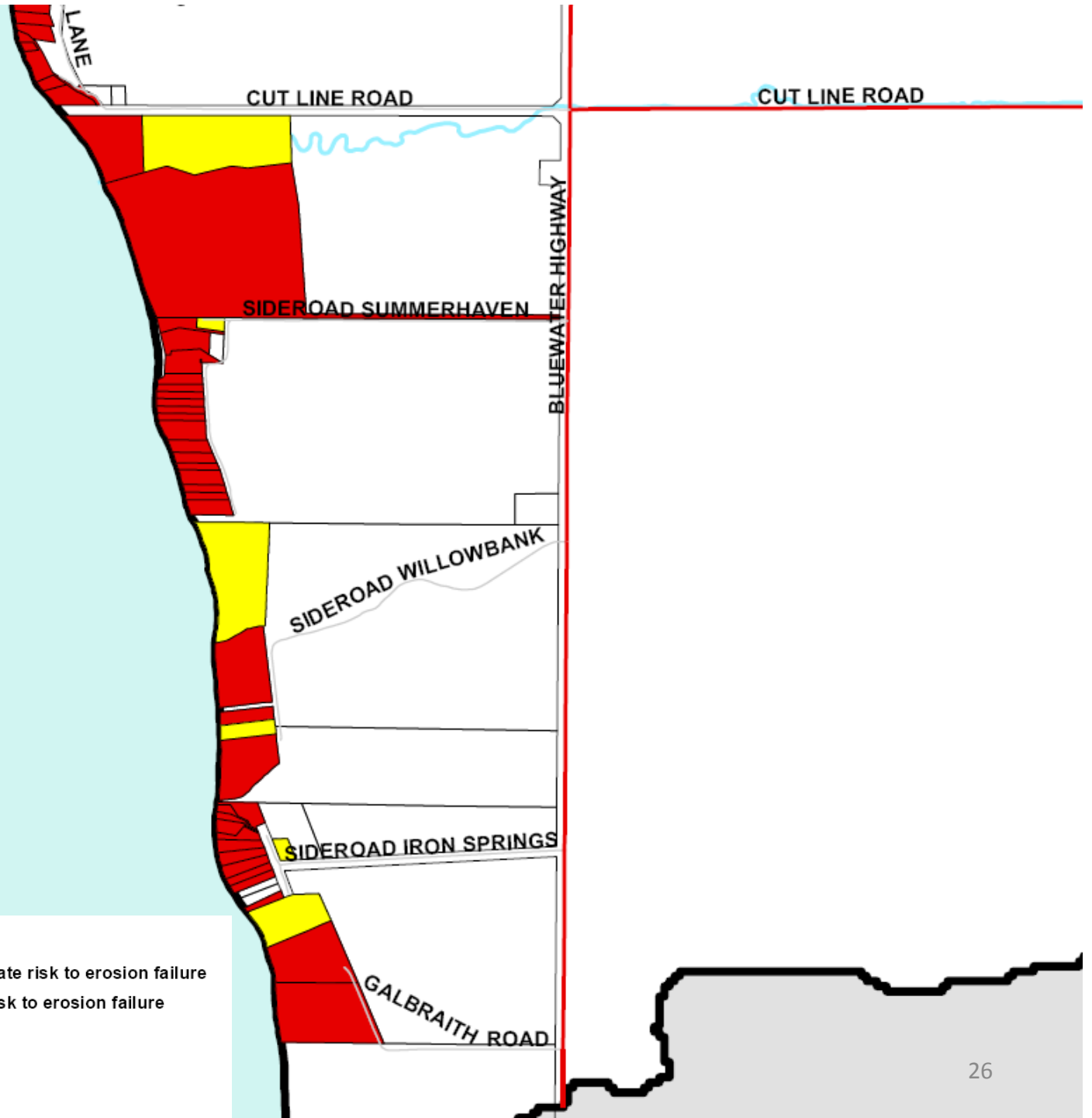
- How to ensure prospective buyers are aware of properties with hazard land designations, so they understand, and can be prepared for, potential risks.
- Ways to assist current owners to evaluate their individual property risk situations.
- Ways to engage property owners to take advantage of local information resources.
- Information for property owners about what to do in the event of a slump.
- Information for property owners on cottage relocation approaches.

# MVCA risk analysis

Lake Huron

## LEGEND


-  Structure(s) on property that is at moderate risk to erosion failure
-  Structure(s) on property that is at high risk to erosion failure
-  Highways
-  Local Streets
-  Approximate Property Boundaries



## *Recommendations:*

### *4. Engage Shoreline Property Owners*

- Ashfield-Colborne Lakefront Association and Bluewater Shoreline Residents' Association communications efforts.
- **Mandatory real estate disclosure of hazard land status of properties at time of sale.**
- Annual municipal mail-out to home addresses of shoreline property owners of fact sheet with urls of information resources and expertise.



The Port of Goderich  
Managed & Operated by GPMC

# Recommendations:

## 5. Local economic development

- Town of Goderich coordinate its tourism initiative with Port Authority plans to maximize local economic benefits of longer shipping season.
- Track bi-national strategic planning for Great Lakes shipping and Highway H20 initiative.
- Village of Bayfield growth plan address lake level extremes and impacts on harbour and shoreline infrastructure. Tourism 'hotspot'.
- Huron County tourism planning for longer recreational/tourism season opportunities.



Village of Bayfield Harbour

## *Recommendations:*

### *6. Conservation and stewardship capacity*

- LHCCC ***Coastal Action Plan*** and *Healthy Lake Huron* strategic priority setting vehicles to:
  - “stack” the numerous ad-hoc and fragmented small stewardship funding programs to support conservation priorities;
  - Consider a ‘geographically focused initiative’ under the *Great Lakes Protection Act, 2015* to access provincial funding and program support for the Coastal Action Plan.



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