Ganaraska Region Conser	vation Authority (GRCA)
LEGEND:	DEFINITIONS:
Hazard Mapping:	100 Year Flood Level
\sim 100 Year Flood Level	The 100 Year Combined Flood Level considers both static lake le storm surge, having a combined probability of being equalled or exceeded during any year of 1% (i.e., probability, $P = 0.01$). The
Flood Hazard Limit	Year Combined Flood Level elevation for GRCA is +76.01 m IGI (+75.55 m to+75.60 m CGVD2013).
Erosion Hazard Limit	Flood Hazard Limit
Dynamic Beach Setback	The Flood Hazard Limit is defined as the 100-Year Flood Level p allowance for wave runup and uprush. For the exposed shoreline effects are calculated based on localized nearshore conditions and waves. For embayments, the standardized 15 m setback is applied Refer to the Lake Ontario Shoreline Management Plan for addition datails
Base Mapping:	
Geographical Names	<u>Toe of Bluff</u> The Toe of Bluff is the transition from the gently sloping beach to
 Ocographical Names Dynamia Baach (Start Dt) 	steep portion of the bank or bluff slope.
 Dynamic Beach (Start Pt) Dynamic Beach (End Pt) 	Stable Slope Allowance The Stable Slope Allowance is defined as a horizontal sethesk
• Dynamic Beach (End Pt)	equivalent to 3.0 times the height of the bank or bluff.
Road Network	Erosion Hazard Limit
GRCA Administrative Boundary	The landward extent of the Erosion Hazard is the sum of the 100 gerosion rate plus the Stable Slope Allowance, measured horizonta from the toe of the bank or bluff.
INTERPRETATION OF THE HAZARD MAPS: The hazard maps were prepared to support the Lake Ontario Shoreline	The Erosion Hazard Limit is not mapped in sheltered waters, how localized shoreline/riverine erosion may occur and is subject to re
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DATA SOURCES: 2018 Orthophotography and Digital Surface Model (DSM) provided by the Ministry of Natural Resources and Forestry	Datums: Horizontal: UTM 17N NAD1983, metres. Vertical: CGVD2013, metresDatum Conversion: IGLD1985 - CGVD2013 = 0.42 m (avera To convert from IGLD85 to CGVD2013, 0.42 m.
2016-2017 LiDAR Digital Terrain Model obtained from the Ministry of Natural Resources and Forestry. Contains information licensed under the Open Government Licence – Ontario.	Note: There are local variations along the within GRCA. Refer to the Lake Ontario
Geographical Names obtained from Natural Resources Canada Road Network File, 2016 Census.	additional details. N
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PREPARED BY: <u>Zuzek inc.</u> ONE WORLD	S. J. LOGAN 100189144 MAR 31, 2020 MAR 31, 2
This map was published March 2020 for the Ganaraska Region Conservation Authority (GRCA). The mapping of hazardous lands, including erosion, flooding, and dynamic beach areas, is subject to change. The proponent of a proposed development on or adjacent to the hazardous lands should contact GRCA to discuss permit requirements.	Every reasonable effort has been made to ensure the accuracy of this map. Howeve GRCA, Zuzek Inc., SJL Engineering, or any other affiliated party assume any liabil arising from its use. This map is provided without warranty of any kind, either exprimiplied.
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Mapping prepared by Zuzek Inc. for the Ganaraska Region Conservation Authority.





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Ganaraska Region Conser	vation Authority (GRCA)
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Geographical Names	The Toe of Bluff is the transition from the gently sloping beach to the
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Inset Map: © OpenStreetMap contributors	$\begin{bmatrix} 0 & 50 & 100 & 200 \\ \vdots & \vdots & \vdots & \vdots \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0$
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Base Mapping:	
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Ganaraska Region Conser	vation Authority (GRCA)
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Mapping prepared by Zuzek Inc. for the Ganaraska Region Conservation Authority.



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GRCA Main Office 2216 County Road 28 Port Hope, Ontario L1A 3V8 Phone: (905) 885-8173 Web: www.grca.on.ca

GRCA Map 31 of 43

Ganaraska Region Conser	vation Authority (GRCA)
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Base Mapping:	Toe of Bluff
Geographical Names	The Toe of Bluff is the transition from the gently sloping beach to the steep portion of the bank or bluff slope.
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Mapping prepared by Zuzek Inc. for the Ganaraska Region Conservation Authority.



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GRCA Main Office 2216 County Road 28 Port Hope, Ontario L1A 3V8 Phone: (905) 885-8173 Web: www.grca.on.ca

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Statistics Canada Catalogue no. 92-500-X Inset Map: © OpenStreetMap contributors	$\begin{bmatrix} 0 & 50 & 100 & 200 \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & &$
PREPARED BY: <u>Zuzek inc.</u> ONE WORLD	S.J.LOGAN B.J.LOGAN 100189144 MAR 31, 2620 00100189144 MAR 31, 2620 001001001001
This map was published March 2020 for the Ganaraska Region Conservation Authority (GRCA). The mapping of hazardous lands, including erosion, flooding, and dynamic beach areas, is subject to change. The proponent of a proposed development on or adjacent to the hazardous lands should contact GRCA to discuss permit requirements.	Every reasonable effort has been made to ensure the accuracy of this map. However, neith GRCA, Zuzek Inc., SJL Engineering, or any other affiliated party assume any liability arising from its use. This map is provided without warranty of any kind, either expressed implied.
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Mapping prepared by Zuzek Inc. for the Ganaraska Region Conservation Authority.

Ganaraska CONSERVATION

GRCA Main Office 2216 County Road 28 Port Hope, Ontario L1A 3V8 Phone: (905) 885-8173 Web: www.grca.on.ca

Ganaraska Region Conser	vation Authority (GRCA)
LEGEND.	DEFINITIONS:
Hazard Mapping:	<u>100 Year Flood Level</u>
\sim 100 Year Flood Level	The 100 Year Combined Flood Level considers both static lake level a storm surge, having a combined probability of being equalled or exceeded during any year of 1% (i.e., probability, P =0.01). The 100
Flood Hazard Limit	Year Combined Flood Level elevation for GRCA is +76.01 m IGLD85 (+75.55 m to+75.60 m CGVD2013).
Erosion Hazard Limit	Flood Hazard Limit
Dynamic Beach Setback	The Flood Hazard Limit is defined as the 100-Year Flood Level plus a allowance for wave runup and uprush. For the exposed shoreline, wav effects are calculated based on localized nearshore conditions and waves. For embayments, the standardized 15 m setback is applied. Refer to the Lake Ontario Shoreline Management Plan for additional details.
Base Mapping:	
Geographical Names	The Toe of Bluff is the transition from the gently sloping beach to the
 Ocographical Matters Dynamic Beach (Start Pt) 	steep portion of the bank or bluff slope.
 Dynamic Deach (Start I t) Dynamic Deach (End Dt) 	Stable Slope Allowance The Stable Slope Allowance is defined as a herizontal setback
Dynamic Beach (End Pt)	equivalent to 3.0 times the height of the bank or bluff.
Koad Network	Erosion Hazard Limit
GRCA Administrative Boundary	The landward extent of the Erosion Hazard is the sum of the 100 year erosion rate plus the Stable Slope Allowance, measured horizontally from the toe of the bank or bluff.
INTERPRETATION OF THE HAZARD MAPS: The hazard maps were prepared to support the Lake Ontario Shoreline Management Plan. Wetland and riverine floodplains are not included on these hazard maps. The Dynamic Beach Setback is the onshore limit of the shaded pink polygon. The offshore limit in the lake highlights the linkages between overall beach stability and health, nearshore sediment resources, and longshore sediment transport. The hazard limit(s) are not the official regulatory limits of the Conservation Authority. Please	 The Erosion Hazard Limit is not mapped in sheltered waters, however localized shoreline/riverine erosion may occur and is subject to review by the Conservation Authority. <u>Dynamic Beach Hazard Limit</u> The Dynamic Beach Hazard Limit is defined as the sum of the Flood Hazard plus 30 metres measured horizontally. If the dynamic beach is eroding, an additional erosion allowance is included and a separate
contact the Conservation Authority for details on the regulatory limit and implications for any proposed work. DATA SOURCES:	Erosion Hazard Limit is not shown. Refer to the Lake Ontario Shorein Management Plan report for additional details. Datums: Datum Conversion:
2018 Orthophotography and Digital Surface Model (DSM) provided by the Ministry of Natural Resources and Forestry	Horizontal: UTM 17N NAD1983, metres. Vertical: CGVD2013, metresIGLD1985 - CGVD2013 = 0.42 m (average) To convert from IGLD85 to CGVD2013, subtra
2016-2017 LiDAR Digital Terrain Model obtained from the Ministry of Natural Resources and Forestry. Contains information licensed under the Open Government Licence – Ontario.	0.42 m. Note: There are local variations along the reach within GRCA. Refer to the Lake Ontario SMP for additional details.
Geographical Names obtained from Natural Resources Canada Road Network File, 2016 Census. Statistics Canada Catalogue no. 92-500-X	
Inset Map: © OpenStreetMap contributors	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
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Ganaraska Region Conser	vation Authority (GRCA)
LEGEND: <u>Hazard Mapping:</u> 100 Year Flood Level Flood Hazard Limit	DEFINITIONS:100 Year Flood LevelThe 100 Year Combined Flood Level considers both static lake level and storm surge, having a combined probability of being equalled or exceeded during any year of 1% (i.e., probability, P =0.01). The 100 Year Combined Flood Level elevation for GRCA is +76.01 m IGLD85 (+75.55 m to+75.60 m CGVD2013).
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Base Mapping: □ Geographical Names ○ Dynamic Beach (Start Pt) • Dynamic Beach (End Pt) ~ Road Network ~ GRCA Administrative Boundary INTERPRETATION OF THE HAZARD MAPS: The hazard maps were prepared to support the Lake Ontario Shoreline Management Plan. Wetland and riverine floodplains are not included on these hazard maps. The Dynamic Beach Setback is the onshore limit of the shaded pink polygon. The offshore limit in the lake highlights the linkages between overall beach stability and health, nearshore sediment resources, and longshore sediment transport. The hazard limit(s) are not the official regulatory limits of the Conservation Authority. Please contact the Conservation Authority for details on the regulatory limit and implications for any proposed work.	Toe of BluffThe Toe of Bluff is the transition from the gently sloping beach to thesteep portion of the bank or bluff slope.Stable Slope AllowanceThe Stable Slope Allowance is defined as a horizontal setbackequivalent to 3.0 times the height of the bank or bluff.Erosion Hazard LimitThe landward extent of the Erosion Hazard is the sum of the 100 yearerosion rate plus the Stable Slope Allowance, measured horizontallyfrom the toe of the bank or bluff.The Erosion Hazard Limit is not mapped in sheltered waters, however,localized shoreline/riverine erosion may occur and is subject to reviewby the Conservation Authority.Dynamic Beach Hazard LimitThe Dynamic Beach Hazard Limit is defined as the sum of the FloodHazard LimitThe Dynamic Beach Hazard Limit is defined as the sum of the FloodHazard LimitThe Dynamic Beach Hazard Limit is defined as the sum of the FloodHazard plus 30 metres measured horizontally. If the dynamic beach iserosion Hazard Limit is not shown. Refer to the Lake Ontario ShorelineManagement Plan report for additional details.
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PREPARED BY: <u>Zuzek inc.</u> ONE WORLD	S. J. LOGAN 100189144 WAR 31, 2020 BUILD ENGINEERING
This map was published March 2020 for the Ganaraska Region Conservation Authority (GRCA). The mapping of hazardous lands, including erosion, flooding, and dynamic beach areas, is subject to change. The proponent of a proposed development on or adjacent to the hazardous lands should contact GRCA to discuss permit requirements.	Every reasonable effort has been made to ensure the accuracy of this map. However, neither GRCA, Zuzek Inc., SJL Engineering, or any other affiliated party assume any liability arising from its use. This map is provided without warranty of any kind, either expressed or implied.
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Mapping prepared by Zuzek Inc. for the Ganaraska Region Conservation Authority.

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 <u>100 Year Flood Level</u> The 100 Year Combined Flood Level considers both static lake level and storm surge, having a combined probability of being equalled or exceeded during any year of 1% (i.e., probability, P =0.01). The 100 Year Combined Flood Level elevation for GRCA is +76.01 m IGLD85 (+75.55 m to+75.60 m CGVD2013). <u>Flood Hazard Limit</u> The Flood Hazard Limit is defined as the 100-Year Flood Level plus an allowance for wave runna and unruch. For the expected charactine wave
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