

Georgian Bay Forever and Georgian Bay Association joint webinars series on Extreme Water Levels, Impacts and Strategies, Oct - Dec 2021 - Questions raised on registration and by participants

Q# 2020 Symposium

1	What causes water levels to fluctuate during warm summer months?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
2	Can US and Canadian members of the IJC work together to protect GB and Great Lakes water as aquifers are depleted in future?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
3	Who determines what the optimum water level is on Georgian Bay?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
4	What can be done to mitigate extreme water level fluctuations in terms of flow controls, both downstream and upstream of G'Bay.	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
5	Do you observe a cyclic trend in water highs and lows.	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
6	What can be done to stabilize water levels if they exceed historical extremes and what time frame and cost would be necessary?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
7	What if any affect does the St. Clair River have on the levels of the water in Lake Huron?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
8	Can someone explain where all the water comes from when Georgian Bay water level raises by approximately one meter?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
9	Why do water levels in GB fluctuate so wildly over a number of days and over a number of years?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
10	why is there a concern about a weather element that has existed forever	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
11	Last year at this exact time the water level dropped dramatically overnight. The same occurred between yesterday & today???	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
12	There are so many rumours as to the cause of fluctuating water levels. What is the truth?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
13	Should the lesser watershed areas receive planning for control measures, Like dams and such	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
14	Why do we see significant changes in the water levels week to week? There can be as much as 8" to 10" without any precipitation	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
15	What criteria are annually evaluated to establish the water levels	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
16	What the extent to which controls are in place?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
17	How controlled are the water levels ?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
18	1) What means do the 2 countries (Canada and US) have to control the level of the great lakes ?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
19	Are the present fluctuations with the water level within historical normals?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
20	Is there a specific cause to the high levels of 2020 and 2021? Such as melting of ice feeding Lake Superior?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
21	Impact of storms with higher water levels. Updated forecast	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
22	How does climate change (e.g. the melting of arctic glaciers) affect water levels in the great lakes?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
23	Are most of the water level swings on Georgian Bay a result of natural causes or people controlling the levels?ad	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
24	How is the climate change is going to affect the levels of water in the Lake Huron?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
25	Will there ever be accountability for the actions taken by the Lake Superior Hydro Company???	This question concerns the Long Lac/Ogoki diversions - Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
26	What measures can be put in place to reduce the impact of water level fluctuation on Great Lakes shipping?	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
27	Do you expect the water levels to rise on Georgian Bay , as it did in the Spring of 2020?	No, we appear to be entering a period of lower water levels.
28	Do we see Georgian Bay water levels increasing or decreasing for 2022?	Decreasing
29	Identify and rank ALL factors influencing water levels	Answered at 2020 Symposium, please refer to: https://georgianbay.ca/water/water-levels/water-levels-symposium-2020/
30	What about current narrow and shallow (only) access routes to cottage? What can be done?	This question concerns the impact of low water on access to cottages. If dredging and/or blasting is an option, and you can get permission to do that, then you should look into it, but it would be better to avoid such action and relocate your dock/access to deeper water, if possible. Other options include extending your dock further out to deeper water. If none of the above work then there is nothing that can be done. The future extreme low water levels when they occur are expected to severely impact access for some cottage locations in Georgian Bay.

Webinar 1

31	Topic A What was last year's high water mark compared to the 100 year?	In the last 100 years it was only higher in October 1986
32	What was this year's?	The highest level in 2021 was in January, ~18 inches below 2020 high
33	What was the lowest since 1990? Thank you	576.1 ft in 2013
34	Forecast for winter and spring water levels	Please refer to GBA weekly water level reports, latest @: https://georgianbay.ca/news/october-17-water-levels-report
35	Where did all the water go this year?	Extreme drought conditions in Lake Superior basin and less rain has lowered water levels in all the Great Lakes in 2021
36	Is there any chance of an accurate water level forecast for more than 3 months?	Please refer to GBA weekly water level reports, latest @: https://georgianbay.ca/news/october-17-water-levels-report
37	Levels dropped close to 2 feet in 2021.	2021 Levels only dropped 12-18 inches when compared to same month in 2020

38	How can Lake Huron / Michigan lake drop 22 inches in one calendar year.	It has not. 2021 Levels only dropped 12-18 inches when compared to same month in 2020
39	Has the high water level peaked for this winter?	Yes, according to the short term predictions which are usually accurate out 6 months
40	When might the levels move down, thanks	Levels have already moved down and are expected to continue to decline through February 2022
41	Christie Beach has historically been a dynamic beach with high and very low water levels. What is extreme for such a beach?	All conditions experienced were within the historic regime. New regimes would lead to new extremes.
42	As water levels continue to fluctuate can we expect greater extremes in seiches as well?	Yes, Seiches occur in addition or subtraction to prevailing water level conditions...so at extreme highs, the seiche will add further.
43	Would a broad archeological history (many millenia) of GB water levels be helpful in our search for understanding current trends	Some research exists on this front. Shorter term Glacial Isostatic Adjustment is working in the basin.
44	Are there specific legislative efforts you recommend to alleviate climate change, on both sides of the border?	Answered by Pierre
45	Also, are there other predictions about water being taken from Michigan Huron and GB (and the other lakes), as US and other country water continues to become more depleted?	Answered by Jane
46	Is it accurate that elevated temperatures in the north are causing permafrost to melt and add to the water in the watershed?	Answered by David
47	Winds can have a devastating effect. Do the models only factor the rainfall? How can wind be incorporated into these data sets?	Answered by David
48	David Where do you see levels in 5 years	Was addressed in the presentation
49	David What is the best projection for the next cycle of high water levels	Was addressed in the presentation
50	Rupert What is the modelling saying for 2022?	Was addressed in the presentation
51	Rupert What are the water level predictions for 2022 for Georgian Bay?	Was addressed in the presentation
52	David What is the 10 year outlook for water levels in Georgian Bay?	Was addressed in the presentation
53	Rupert Short-term, what's next summer look like?	Was addressed in the presentation
54	David What can we expect in the way of water levels over the next 30 years?	Was addressed in the presentation
55	David Water level forecasts for next 20 years?	Was addressed in the presentation
56	Rupert Prediction is easy, being correct difficult. What is the 7-10 yr water level prediction for Georgian Bay and at what confidence	Was addressed in the presentation
57	David What are the expectations for the next few years?	Was addressed in the presentation
58	David With expectations of extreme high or extreme low water levels and uncertainty. How are most likely outcomes established and	Was addressed in the presentation
59	Rupert Will the water receded in the near future?	Was addressed in the presentation
60	David Is there any information to tell how quickly the high and low water levels will happen? 8 years has been our experience.	Was addressed in the presentation
61	Rupert what will the water levels be like for the next 12 months	Was addressed in the presentation
62	David What are the high levels to be expected? Times predicted?	Was addressed in the presentation
63	David I don't understand the message of David's last slide re low water datum. Why would they dredge the river if higher water levels are forecast?	Because the Vertical Datum sub-committee is not privy to the new modelling they aren't applying it in their calculations and they are not including climate change impacts in their discussions. These internal silos of information within ECCC could result in ill considered recommendations that would impact water levels in Lake M-H. Our effort was to point this potential real-life adverse impact out.
64	Long range forecast re water levels	Was addressed in the presentation
65	Is there a prediction for next year's high water level?	Was addressed in the presentation
66	David Can you explain the overlay of the different long-term and short-term cycles on water levels? Show a graph over time.	There is no clear evidence of short or long term cycles and climate change impacts are expected to disrupt any previous water levels patterns
67	David What evidence exists that the wetlands have improved since P2014?	This question presupposes that wetlands were severely impacted in the low water era of 2012/4. In that period some wetlands retreated and some expanded. Wetlands seem to have resistance to water levels variability, but more research is needed, in particular to determine adaptability to the more rapid transitions between extreme low and extreme high levels anticipate in future years.
68	David Can we expect to see the intense rainstorms continue or get worse?	The predictions are that intense rainstorms will gradually increase in both frequency and energy as water and air temperatures increase
69	What is the prediction for the next five years for water levels on Georgian Bay?	Was addressed in the presentation
70	We were surprised by the dramatic drop in water levels between summer 2020-2021. Are there forecasts of water levels available?	Was addressed in the presentation
71	What is predicted the water level for the next 5 years?	Was addressed in the presentation
72	Why does water level fluctuate so much and what are future predictions	Was addressed in the presentation
73	What do you expect of our water levels in the future?	Was addressed in the presentation
74	what will future water levels be and why	Was addressed in the presentation
75	How high are the water levels for 2022	Was addressed in the presentation

76	Topic B What are the main causes of bacteriological contamination of beaches - sewage and runoff near beaches or beach activity/swimming itself (or something else?). Also, is anything known about potential impacts of sunscreen on aquatic fauna? Most sunscreens can be highly toxic to coral reefs, so I'm wondering if they are also toxic to other organisms.	Answered by Aisha
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77	Topic C	Have experienced cloudy, green algae and perhaps smells this summer. Why? Cause/s? Related to water levels? Future?	Cladophora likely. Water temperature, nutrients, Quagga Mussels all have a role to play.
78		Impacts on coastal wetlands recognizing that fluctuations are part of coastal marsh ecosystems.	Fluctuations help maintain healthy biodiversity.
79		How can local freshwater ecologists get involved and support locally?	Sure. Volunteer with a local group.
80		What does bathing and hair washing in lake contribute negatively to water pollution? Is anything known about potential impacts of sunscreen on aquatic fauna? Most sunscreens can be highly toxic to coral reefs, so I'm wondering if they are also toxic to other organisms.	Answered by Aisha
81		For Aisha: Are there alternatives to willow bushes that provide good stabilization but grow to lower heights - environment where views are desired and trimming done	Answered by Aisha
82		For David: Is there a similar environmental organization monitoring GB from Midland to Owen Sound/Tobermory? If not how can we establish one?	GBF is doing this - answered by David
83		Phragmites are invasive, hard to remove and undesirable but are they helping control erosion?	Answered by David
84	Off Topic	Do water levels in Georgian Bay affect levels in smaller interior lakes, e.g. Muskoka, Kawarthas	No
85		I am from Georgina Island on Lake Simcoe, will this presentation be relevant to me since it is focused on GB? Miigwetch	No
86		Will it also affect inland water bodies?	No
87		Does a Beaver dam collapse introduce contaminated water to adjacent water bodies?	A study out of the University of Rhode Island showed that Beaver Ponds actually remove nitrogen (up to 45%) and don't hold contaminated water.
88		I suspect that the lake temperatures are unusually warm this year. What is the impact of warmer temperatures going into fall and	It is complicated, but usually warmer water heading into the fall increases evaporation and delays ice on time. Also, since there is more heat in the water, come spring the water may warm faster.
89		what are the latest treatments for blue green algae?	Blue Green algae blooms happen with nutrients, temperature increases and anoxia - conditions like those on earth before oxygen dominated the atmosphere.
90		Algae and Eurasian Milfoil and other vegetation which is changing!	The ecosystem is in flux as invasive species establish their niche in the new ecosystem.
91		What is the negative impact of fish farms on Georgian Bay? I have a concern about the one being proposed near Warton.	There are numerous negative environmental impacts from open net cage aquaculture operations in Lake Huron. Please refer to: https://georgianbay.ca/fisheries/cage-aquaculture-issue/ for full details. The proposed farm at Warton is on land and should pose minimal environmental risk.
92		How will I get rid of my dock that has unencapsulated dock foam? When will I be required to get rid of it?	I think you can talk about unencapsulated foam being an issue with more wild weather. I can address with Dawn - she just isn't happy with the answer
93		Who is responsible to old docks on islands in Georgian Bay? What happens if the MNRF does not take responsibility?	Municipalities and cottage associations working together is the best model for dealing with abandoned docks. Township of the Archipelago has a structure in place that is working. Docks still attached to islands are the responsibility of the owner of the property.
94		Is funding available to replace styrofoam floats on existing docks or to replace docks completely?	Not yet, but this is an excellent idea.
95	David	Algae bloom in Honey Harbour area. Is this local or throughout the GB? Health danger? Remedy? Related to increasing boat traffic and grey water dumping?	Algae blooms are increasing in frequency throughout the Great Lakes and are even occurring in Lake Superior. The primary drivers appear to be increasing water temperatures and nutrient loading. Farm run off, continued industrial pollution, grey water discharges from boats, municipal sewage overflows from more extreme storm events, and, possibly, nutrient loading from other sources, such as cottage septic systems, all contribute. Blue green algae is harmful to human and pet health. Other algae is significantly less harmful.
96	Julie or Aisha	what are the options for creating safe water access for kayakers and swimmers along a cobblestone beach are?	Placing docks on cobblestone beaches is usually problematical given the potential impact of wave and/or storm action. Probably better to find a location along the beach that is safe rather than attempt to construct a dock for safe water access.
97	Rupert	What is the regulation for jet ski lifts? Safety is a concern for kids playing there.	If a jet ski lift is a shoreline structure then speak to your municipality
98	Rupert	With the increase of Short Term Rentals how are the rest of the full time residents supposed to compensate for the increase demand?	If the demand referred to is for shared use of the water, then GBA has a publication "Georgian Bay for Everyone" that might be helpful, see: https://georgianbay.ca/georgian-bay-for-everyone-2021/ If some other demand then some municipalities are developing policies around short term rentals.
99	Rupert	What impact does Development have on our wetlands, flora, fauna and wildlife.	Most coastal municipal planning regulations are designed to minimize or eliminate the impact of new development on the environment. Instances where developers seek to go outside of these regulations should not be approved and you local community association and councilor should be able to assist in challenging/preventing such developments.
100	Rupert	Would gov't remediation ever occur to expand inlet/outlet points into enclosed areas in G-Bay (ie: Cognashene Lake)?	This would involve blasting which we would not usually support and is unlikely to be approved by the applicable government agencies
101	David/ Aisha	I am interested to know whether any PFAS investigations have been completed by GBF or the SSEA and what concentrations observed.	Not to date. There are thousands of PFAS chemicals. Chemicals have historically been regulated specifically as to their chemical structure making it easy for manufacturers to produce slight variations to get around regulations. The family of chemicals is now being covered by a blanket approach. These chemicals have been identified as part of the Great Lakes Water Quality Agreement: Annex 3 Chemicals of Mutual Concern and Canada in March 2022 released the following strategy document for some of the PFAS chemical family - https://binational.net/wp-content/uploads/2022/03/Canada-Great-Lakes-Strategy-for-PFOS-PFOA-and-LC-PFCAs-Risk-Management.pdf GBF and SSEA will look to see if PFAS chemical family water testing will help to move this strategy forward.
102	Aisha	Is there a link between Algae and Eurasian Milfoil?	Other than both benefitting from increased water temperatures, no.
103	General	Will there be an executive type summary available following this webinar for circulation in our cottage association news	Yes - this is posted on both the GBF and GBA websites
104		What can I do as an individual to help make a difference?	Reduce your carbon footprint, such as switching to an electric car(s)

105		HOW DO CHANGING WATER LEVELS IMPACT NATIVE LAND CLAIMS?	Unlikely to have any impact, as the land parcels pertinent to Native Land Claims will not change when water levels change.
106		there is a major transition from urban areas to more rural areas. this will exacerbate the needs to be aware of population impact, therefore more infrastructure. please address this issue.	Answered
107	David	What is the biggest and most timely action I can personally take to make a difference here?	Switch to electric cars.
108		Will the information you present pertain to those of us who are further inland but will likely have flooding problems from high water levels	No. Flooding in inland lakes and waterways is not influenced by lake levels on the Great Lakes. Usually MNR is the government agency that can provide advice on their control mechanisms and who you can contact for any flooding issues.

Webinar 2

Topic A

WIND AND WAKES			
109	David	Was there a significant increase in wind events on Lake Huron during 2020 or 2021?	The number of windy vs calm days does not appear to be changing year to years as a result of climate change, but the intensity (energy) of storm events is steadily increasing, causing more storm damage and higher storm surges. Examining long term trends yields more useful information than comparing one year with the next.
110	Brian	Is there any evidence that wind direction and intensity will be affected by climate change. Our water level is affected dramatically in a strong north wind. Local anecdotal evidence is that north wind is coming earlier in the Autumn and is stronger."	See answer to previous question. Please note that wind speed, direction and duration will alter water levels on the different coasts of Georgian Bay temporarily (the bath tub effect).
111	Brian	is there a wind equivalent measurement to a "degree day" and if so what change would we expect from 10yrs ago to 10yrs hence	The energy in storms is being measured and is increasing - see answer to Q117. AS water and air temperatures steadily increase we can expect this trend to continue.
112	David	What about tornados!	The Fujita-Pearson scale ranks tornadoes by wind speed. The rankings range from F0 (very weak) to F6 (inconceivable). F0 denotes wind speeds of 40 to 72 mph; F1, 73 to 112 mph; F2, 113 to 157 mph; F3, 158 to 206 mph; F4, 207 to 260 mph; F5, 261 to 318 mph; and F6, 319 to 379 mph. Therefore any wind speed over 40 mph is considered a tornado. More tornados of increasing ranking can be expected in future years (see above Q&As)
113		High water has always been a concern at my property since 2015, but boat wave the most problematic and destructive	
114	Rupert	How to get boat owners to realize the extreme wakes they create when going through narrow passages by close proximity to docks	These questions concern damage from boat wakes which is a major concern throughout much of Georgian Bay. The best way to address this is through education and providing information as GBA and Boating Ontario have done to together develop: "Georgian Bay for Everyone", see: https://georgianbay.ca/georgian-bay-for-everyone-2021/
115		How do you reduce the impact from the wakes of 200-300 hp motors that have significantly increased in numbers the past 5 years?	
116		Will you discuss education for boaters that lack respect for shorelines and docks with their wakes.	
FLOODING			
117		Is there a way to prevent my basement from flooding?	Answered by Cheryl Evans in Webinar 3
118		What can we do to help prevent flooding?	Answered by Alex is his presentation in Webinar 2
119		My cottage was flooded in 2020, it is made of stone and cannot be raised or moved, what can I do to protect my cottage?	Answered by Alex is his presentation in Webinar 2. However if future water levels exceed 2020 levels and the shoreline techniques Alex explained are insufficient, then you may have to work out how to move your cottage to higher ground or raise it.
EROSION			
120	Roy	Are coastal engineers available to municipalities deciding acceptable risk mitigation measures regarding shoreline erosion?	Yes, but suggest you raise this matter with your local municipality.
121		Steel wall put in the protect bluff from erosion..we used to have 50 feet beach..now have none..how do we get our beach back	
122		Steel seawall installed to protect the bluff..now we have nobeach...how to get the beach back	
123		Concerned about our shoreline where we live as it is eroding by fluctuating water levels, waves and wakes.	Answered by Alex is his presentation in Webinar 2 - shoreline hardening is usually not a good solution and when water levels and storms rise higher than retaining walls (whether steel or concrete) then these walls can collapse. It is better to use techniques to create a gentle shore slope if possible. In extreme cases there may not be a solution other than relocating houses further inshore.
124		WORRIED ABOUT LOSING MY HOUSE	
125		What can I do to stop erosion of our shoreline?	Answered by Alex is his presentation in Webinar 2
126		What materials can be used to protect the shoreline from erosion with high water levels?	Answered by Alex is his presentation in Webinar 2
127		What is the best method for slowing erosion of a large lake shoreline?	Answered by Alex is his presentation in Webinar 2
128		what is the most cost effective way to protect my shoreline against erosion from high water levels & the wake from larger boats?	Answered by Alex is his presentation in Webinar 2
129	Roy	What are we allowed to do to our shoreline to protect it from erosion?	Each municipality will have different bylaws governing permitted shoreline structures, so it is important to consult your municipal planning department before undertaking any shoreline hardening.
130	Aisha	For areas that are vulnerable to shoreline erosion, does leaving bushes higher ie 5-6 feet provide greater protections than trimming them lower ie 2-3 feet? If this is protective, can you quantify the level of protection ie a lot or a little?	Healthy roots are what hold the soil in place so key is keeping the vegetation alive and healthy
131	David	What kinds of funding are available to protect shorelines from significant erosion?	Protecting shorelines from erosion by hardening the shoreline has proven to only offer a temporary solution in most cases and is therefore not recommended. It is better to keep shorelines natural state as far as possible and revert to or create as gentle a slope as can be achieved to reduce erosion. In cases where such measures are insufficient to save shoreline structures, raising/relocation of such structures may be the only solution. Where raising/relocation is not possible, there may not be a solution. (Grant) Funding for workable solutions is usually available for municipalities, might be available for some businesses, but we are not aware of any funding for private residences.
132	David	I'm interested in infrastructure to protect the integrity of my shoreline. Is gov't going to help with this?	
SHORELINES + NATURALIZATION			

133	Roy	How can we clean up the water front without going into the water with heavy equipment?	If this question concerns the removal of existing breakwalls, piers, groynes or other shoreline structures, then this is a question for your contractor to answer.
134	Roy	Public use of Shoreline, impact on inshore well, etc.	Public access regulations for shorelines varies between municipalities and may depend upon ownership of the shoreline road allowance, for instance. It is recommended to consult your municipality to determine the rules that apply to your shoreline. Inshore wells will likely be impacted by water levels variability, but this will depend upon the topography and rock formations etc. for each individual property.
135	Roy	Best way to build/preserve land and floating structures.	As above creating/preserving a gentle slope, maintaining natural shorelines and vegetation and avoiding shoreline hardening is the best way to protect land. Floating structures are recommended over fixed shoreline/dock structures such as cribs. There were various techniques for constructing floating structures, and attaching them to the shore in such a way that they can be adjusted to address water levels variability, waves and wakes presented in the webinar series.
136	Roy	How do altered peninsulas affect the neighbouring shorelines?	Where beaches, wetlands and other natural shoreline habitat rely on sediment being carried along the shore to preserve such environments, altering a peninsula can have a negative impact on such habitats and should be avoided or dismantled.
137	Alex	Can shorelines be trimmed or managed to maintain shoreline stability, and simultaneously improve water views from land?	As above, if the aim is to revert the shoreline to its natural state, then this would be beneficial, but hardening the shoreline to improve water views from land should be avoided.
138	Alex	protection of structures near waterline	see answers to above questions
139	Alex	We are looking to learn more about shoreline protection	see answers to above questions + information provided in webinar series
140	Alex	As more cottage owners are becoming grand parents I have noticed more and more wet lands being smothered by barging in sand to create artificial beaches. How sad, any thoughts?	Filling in wetlands for whatever reason (including creating artificial beaches) is not permitted under provincial regulations (please refer to MNRF regulations on this). Some municipalities will also have site alteration bylaws that ban this. Any filling in of wetlands should be reported to your local municipality who will usually be able to reverse the damage done.
141	Aisha	What is GBA etc doing to educate cottagers about the value of native plants growing on the shoreline and the problems caused by replacing them with sand or other shoreline development?	A considerable amount of information regarding the value of shoreline native plants is available on the SSEA, Georgian Bay Forever and Georgian Bay Biosphere websites. GBA does not usually develop this type of web content but instead directs readers to where they can find the information.
142	Aisha	What plants can we use to stabilize shorelines ? We have armoured the channel Side with Rock due to erosion to protect trees.	see above. Please note that hardening the shoreline with rocks to prevent erosion may not withstand higher future water levels.
143	Aisha	What species of trees or shrubs that could be planted to stabilize the shore against wind-driven ice erosion?	Wind driven ice erosion is mechanically very difficult to prevent. The forces involved can move large boulders and other built shoreline hardening structures are no match for these forces. The changes in ice cover is an evolving transformation in our Great Lakes system so there will be much learning over the coming years. In general planting native species that have evolved into these niches will help if they have been removed in the past. Shrubs and trees along the shoreline especially water-loving native species like Sweet Gale and Tamarack are indigenous species to Georgian Bay. The following reference lists numerous other species: http://ontariotrees.com/main/habitat.php?type=3
144	Julie	We live at the mouth of the Nottawasaga River at Georgian Bay. NVCA GUIDELINES? For natural protection?	Please refer to the Nottawasaga Valley Conservation Authority for information. As above avoiding shore hardening and preserving natural shorelines and plants/trees is the best option.
145	David	Ways to protect rocky shorelines versus sandy ones?	Rocky shorelines are substantially less vulnerable to erosion, but the same principles apply regarding preserving the natural shoreline/habitat.
146	David	I lost about 15 ft. of dry beach...will it eventually come back?	In lower water, yes, if there are structures along the shore that are preventing the migration of sediment then it will take longer to regenerate.
147	Rupert	Which body has authority over shoreline restoration and expansion.	MNRF and your municipality (setbacks) - consult your municipality
SHORELINE HARDENING			
148		What are the negative impacts of measures taken to armour shorelines to prevent property damage from high water and storms?	Generally speaking, as above, shoreline hardening should be avoided in favour of preserving the natural shoreline. This includes the placing of large boulders, installing seawalls, etc. Shoreline hardening can often increase erosion at nearby locations and interfere with the natural migration of sediment along the shoreline. Wave impacts are reduced by preserving or creating a more gentle slope. Therefore shoreline hardening usually has the opposite effect. Most shoreline hardening is unlikely to be able to deal with increased water levels variability and will need significant maintenance, or even replacement, to continue to be effective.
149	Alex,	There are several beachfront owner that have purposely placed huge boulders that run into the Bay, even at lowest level.	
150	answer	How the giant boulders next door impact my shoreline	
151	together	Steel seawall installed to protect the bluff..now we have nobeach...how to get the beach back	
152		Where can we find out what is the best shoreline reinforcing option for our property?	
153	Roy	What is the impact of shoreline hardening measures on beaches including the lack of effective stakeholder consultation measures.	Shoreline hardening can often have a negative impact on adjacent beaches, as above. Stakeholder consultations amongst shoreline property owners are highly recommended to determine a coordinated approach to erosion and other shoreline issues.
154	David	Loss of stone that owner has placed at their expense to secure shoreline	As above increasing water levels variability is likely to impact shoreline hardening more frequently such as loss of installed stones.
155		What are the most environmentally acceptable approaches to hardening shorelines against erosion due to higher water levels?	A seawall situated well above the high water mark to protect against storm surges, while still allowing a gentle natural shoreline slope below it to mitigate wave/storm damage, would likely have the lowest negative environmental impact.
MUNICIPAL STORMWATER MANAGEMENT			
156			
157	Rupert	How do we insure townships are being proactive managing water run off instead of dealing with the damage of flooding	Municipalities all have different stormwater management issues to address. GBA is asking for more resources for municipalities on this see: https://georgianbay.ca/news/sewage-overflow-into-georgian-bay-at-collingwood to make sure that they have the ability to be proactive.

158	HIGHT WATER LEVEL MARK	
159		What modelling is available online and what planning permissions are being accomodated for this fluctuation?
160	Rupert	Is the municipal high water mark ever subject to review? Who is responsible for setting it?
161		How should municipalities/landowners handle decision making using the current high water mark, given that it's likely to change?

Online modelling information on upcoming water levels was provided at the previous webinar. Municipalities have the option to fast track planning and building permits if they declare a state of emergency, as was done by some in 2013 when there was an extreme low water level affecting access to some properties. Municipalities have the ability to review and change their high water level mark. As recommended in the presentation - we suggest new buildings or relocations should be placed well above the setback from the high water mark to cater for increasing water levels.

Topic B

162	MUNICIPAL PLANNING REGS	
163		How can the municipalities be involved to protect the community?
164	Rupert	The townships seem not to be not informed on these issues. With bylaws like height restrictions, how are they changing with CC
165		What are the municipalities doing to adapt to this problem?
166		opinion wrt shore line clutter ie saunas, docks, boats, decks etc.
167	Rupert	How will/might building codes on private waterfront property be affected?
168		If current boathouse location is not viable anymore, are they allowed to be moved to a new location or rebuilt in a new location
169		How can municipal OP's address flood plain 'grandfathering'?
170	Rupert	When is shoreline ownership ambulatory when water levels fluctuate due to climate change? ie: some years no beach vs 50 feet
171		DOCKS & SHORELINE STRUCTURES
171		How can I modify a crib dock to withstand water level fluctuations
172	Rick	What is the best way to build/preserve cribbing/dock/boathouse structures and connection to floating structure?
173		Is there anything we can modify on existing dock cribs (& build a new crib) to survive this fluctuation in water level?
174		Docks and boathouses - how cope with extreme variations over short time periods? Existing and new structures from H2O & ice.
175	David	What dock techniques are being used to mitigate fluctuating water levels?
176		How to minimize dock damage from ice, water level fluctuation including wind driven surges
177		How to prevent dock and boat damage in storms.
178		Can an old boathouse be floated?
179		GENERAL
179		More info on water level impact
180		Be specific about what actions individuals may take.

Communities need to work with their municipality to ensure that planning regulations are being respected and followed. Public consultations on planning bylaw reviews are an opportunity for communities to provide input. In GBA's experience municipalities are well informed on climate change issues, from various sources, including the Association of Municipalities of Ontario (AMO) where Parry Sound mayor Jamie McCarvill is now the President, and the Great Lakes and St Lawrence Cities Initiative, who provide a wealth of information on climate change adaptation and other matters, and were one of the organizations that put together Action Plan 2030 that we heard about in the previous webinar.

Building codes are set by the province and do not change often. In the presentation information was provided on what is required for relocation and rebuilds.

We have examined the OPs of the 5 coastal municipalities we deal with on the east and north shores of Georgian Bay and there is no reference to flood plain grandfathering. The primary way that municipalities can address future flooding from high waters is to reset their high water marks.

Complex issue - may vary between municipalities so best to consult your municipality. Generally speaking private ownership up to a certain number of feet above the high water level mark does not apply.

It is recommended that you transition from crib docks and fixed shoreline structure to floating docks, flexible ramps etc. wherever possible. Spending any money on modifying a crib dock (or building a new one) is not recommended. There were some techniques presented at the webinar series for connecting floating structures to shore and addressing fluctuating water levels, ice movement/damage, storm surges and wakes. There are numerous others and new technology solutions are likely as demand strengthens, including mechanisms that hold boats away from docks to reduce/eliminate damage from waves and wakes. You need to select the best option for you and determine the best way to winterize docks to deal with potential ice movement/damage. These solutions are often location specific.

Usually, but it may be expensive and require a crane to lift it onto a new floating platform (dock).

answered in presentation

answered in presentation

Webinar 3

Topic A - Septics

181	Impact of High Water Levels	
182	Neil	High water levels and older septic systems
183	Neil	How far from the shoreline should a septic system be, to be safe?
184	Neil	How can I protect the septic system from excess water (rain) seeping into it.
185	Neil	Will sewer requirements change with climate?
186	Neil	How far back from the high water mark should our leach fields be
187	Neil	will the province start investigating septic beds to ensure not too close to the now higher water levels
188	Neil	How would a septic and grey water system affect the eco-system
189	Neil	Maintenance & Inspections
189	Neil	How to gauge integrity of a 20 year old septic system
190	Neil	As a summer resident, is there any care to septic system I have my septic pumped out every 5-6 yes. Is this sufficient?
191	Neil	What is the lifetime of a septic tank?
192	Neil	requirements for septic systems, support for updating septic systems

Later this summer the ECCC future water levels study is expected to be released. This comprehensive study will provide the information you and your municipality need to assess what changes may be needed to your Class 4 septic system (leaching bed). We believe that municipalities will recalculate the optimum high water mark following the release of this report and all property owners should review their septic system if it is low lying and potentially vulnerable to high water levels, storm surges and flooding. Protecting the septic bed from flooding is unlikely to be a viable long term option. Relocating septic beds to higher ground (this might require pumping) is one solution, or switching to a different sytem that is not vulnerable to flooding (i.e. composting toilet and grey water pit on higher ground, or collection tanks if the municipality will permit them). The age of the system is unlikley to be relevant - the elevation and location is the key factor to consider. Consult your municipality on setback requirements and minimum distance from shoreline as these vary.

There is potential for both septic and grey water systems to leach nutrients and pathogens into the water downstream from the leaching/grey water bed and water testing is advised if you are concerned that this may be happening.

Information on how to care for your septic system can be found here: <https://georgianbay.ca/water/water-quality/septic-management-and-inspections/>. Septic systems in seasonal use cottages can last much longer than those used every day, but regular inspection and maintenance is still required. The tank should not be pumped out before the sludge level reaches 1/3, but should be pumped out when it does reach that level. Simply pumping out every few years without inspecting the level is not recommended. If your septic system is backing up so that the plumbing in the house is not draining there is likely to be a problem that requires professional input, probably a blockage that needs to be cleared.

193 **Neil** My septic won't drain when there is a lot of rain making the plumbing inoperable.
Are there any products at all to put in the septic system to help it work?

There are products that purport to improve septic performance, but we do not recommend using them, as there is no definitive proof that they work and a potential for them to do harm.

Septic Technologies

194 **Neil** Have septic systems changed over the last 20 years and if so, how are they different today from 20 years ago?

Additional options have been developed over the last 20 years called: Advanced Treatment Systems, which includes Ecoflow. There are 6 approved installers in Ontario, see: <https://www.premiertechaqua.com/en-ca>; <https://waterloo-biofilter.com/>; <https://www.norweco.com/>; <https://www.makeway.ca/products/system-o-septic-systems/>; <https://www.bionest-tech.com/ME-en/product/155/bionest-system.html>; <https://biomicrobics.com/>. GBA is finalizing a septic guide which will be posted on the above weblink when complete and will have details of these installers. The only other change in government approved systems is an incineration system (see: <https://www.thecabindepot.ca/collections/cinderella-incinerating-toilets/products/cinderella-gas-incineration-toilet>) which will also be referenced in the guide.

195 **Neil** Should we promote more environmentally friendly septic systems such as Ecoflow

Impact of Warmer Water

196 **Neil** Questions for Aisha and/or David/Rupert? Warmer water in the Bay may mean existing sewage systems are insufficient, because the nutrient outflow plus warmer water may cause eutrophication. Is this a concern that your organizations are addressing? What can be done?

Yes, it is a concern. As above GBA is developing a septic guide and this matter will be addressed. It is a somewhat complex topic, but the issue is the extent to which Class 4 septic systems and grey water pits process nutrients, what soil coverage is needed between the system and the water, and therefore what nutrients may be entering the water from the system over time.

Septic Planning Issues

197 **Rupert** Will Brandy's Island Marina (yacht club) be allowed to proceed with plan to empty concentrated boat sewage into a small septic system

Brandy's Cove is proceeding with the installation of their sewage system, but GBA is working with a local group to challenge the MECP approval of the system and will be reporting on progress over the coming months to have the approval reversed and the system removed.

Topic A - Potable Water

Impacts of High Water Levels

198 **Neil** impacts on well water?

Fluctuating water levels from increased water levels variability will have some impact on the water table level at your property. Whether or not this will impact the water quality in your well will be a function of the soil and rock strata type, but, provided the well is not flooded, the impact will probably be low.

199 **Neil** We use a well that is 55' deep for our water supply and I'm concerned that higher water levels could put the well at risk.

Testing

200 **Neil** How often should we test our water: we have a composting toilet that is directed to a weeping bed

Please visit: <https://www.publichealthontario.ca/en/laboratory-services/well-water-testing> for details on how you can test your water supply including well water. You should also consider participating in the Lake Partner Program if you wish to do further testing in your area, see: <https://georgianbay.ca/lake-partner-program/>

201 **Neil** We need to create a better water testing and lab accessibility by region to measure the composition of temperature, PH, etc.

202 **Neil** How can we test GB water For ensuring is safe for consumption

Technology

203 **Neil** I am most interested in the effect of water levels on systems for potable water = current and new technologies.

General

204 **Neil** We are presently getting our water from an underground stream coming from the escarpment. What should our concern be .

Assuming you are referring to the Niagara Escarpment, the ecological integrity of the escarpment would be the determining factor and you might want to consider participating in the protection of it.

Topic B - Insurance & Flooding

205 **Cheryl** What does the insurance industry cover for dock damage due to high water?

Suggest you consult your insurance broker to determine what coverage may be available, but dock coverage for storm surges and high water is usually limited or not offered. Also see: <https://georgianbay.ca/boating/insurance-information/>

206 **Cheryl** Is there any cottage insurance available for damage due to high winds and high water resulting from high winds?

You should be able to obtain insurance for the replacement cost of the cottage and liability coverage - suggest you consult your broker. Also see: <https://georgianbay.ca/boating/insurance-information/>

207 **Cheryl** Is there any hope of insuring an old poorly maintained cottage without renovations...maybe property liability coverage?

Insurance markets reflect global insurance claims which have been increasing due to climate change and an increase in natural disasters.

208 **Cheryl** Why is insurance so costly?

Information was provided during the webinar on how to protect your basement from flooding.

209 **Cheryl** underground water level affecting our home, this summer we had water in basement from heavy frequent rains

Topic C - Infrastructure

210 How can the municipalities like Wasaga Beach mitigate this problem?

If there is an extreme water levels issue, municipalities can declare a state of emergency which then allows them to put in place fast tracking of approvals etc. Otherwise municipal planning regulations and other bylaws will dictate what a municipality can and cannot do.