



Guide to Naturalizing a Lakefront Shoreline

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**WABAMUN WATERSHED
MANAGEMENT COUNCIL**

Retaining walls and non-vegetated shorelines are a very common sight on shore-line properties in Alberta. These urbanized shorelines have a huge impact on the lake and shoreline from impacting aquatic vegetation and fish populations to reducing the stability and diversity of lake shores.

There are numerous benefits associated with restoring a more naturalized shoreline. For example naturalization helps protect shorelines, reduces erosion and nutrient loading, re-establishes wildlife habitat, improves fish habitat and water quality, and is visually pleasing.

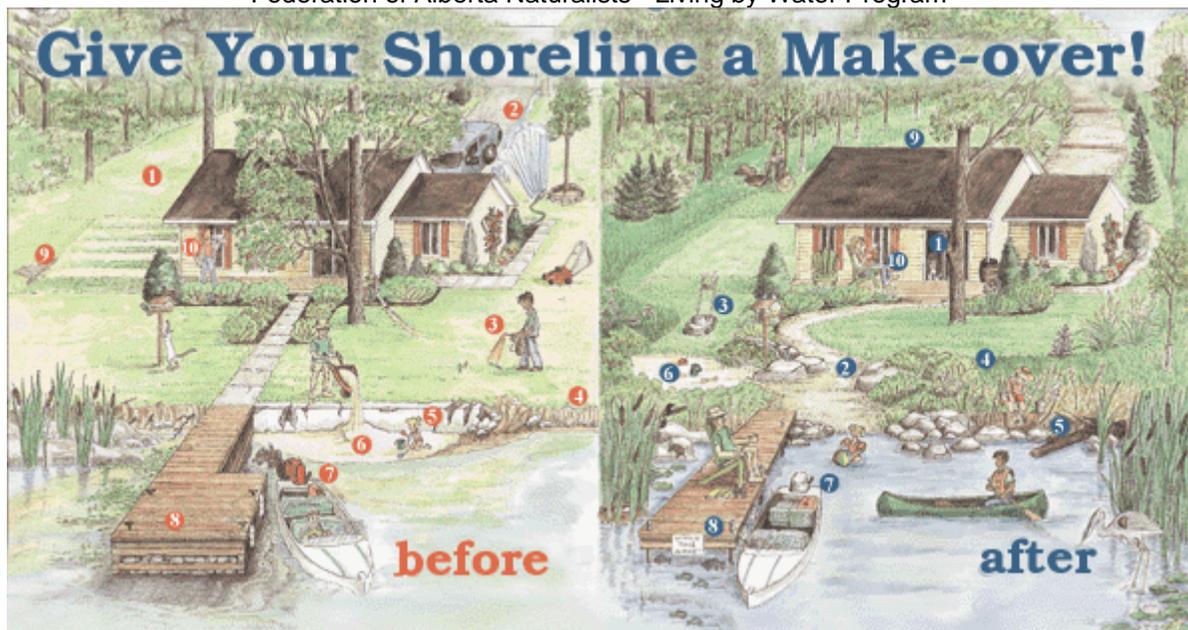
In an effort to improve water quality and to demonstrate that modifying an urbanized shoreline into a more natural habitat is both possible and attractive, naturalization of a shoreline was undertaken at Seba Beach on Lake Wabamun. The following outlines the general steps interested lake residents could take to naturalize their shoreline.

The Steps to Shoreline Naturalization

Step 1: Overall Property Assessment

First assess your property to determine the state of your shoreline and the potential for changes or enhancements that could make it more natural while still maintaining features that are important to you. You may wish to take some “before” photographs and make some notes for reference. You should also confirm your property lines, especially noting where your lakeside property ends. The image below provides some ideas of what you could do to naturalize your site or you could compare your property to a natural shoreline found at your lake.

Federation of Alberta Naturalists - Living by Water Program



Before

1. Cleared, manicured lot - lacks shade and privacy; loss of native plants leads to more erosion, runoff...and work for you!
2. Runoff - flows over solid surfaces accelerating erosion; pollutants and excess silt degrade habitat for aquatic life.
3. Chemical fertilizers and pesticides - degrade water quality, are hazardous to your health, can be deadly for fish and other wildlife.
4. Lawn to the water's edge - lacks deep roots required to stabilize bank.
5. Hardened shoreline - can deflect erosion downstream, eliminates "natural filtering" of pollutants and sediment, degrades habitat.
6. Artificial beach - requires ongoing sand replacement, reduces water quality, degrades aquatic habitat.
7. Old 2-stroke engine - dumps 25-40% of fuel, un-combusted into water and air.
8. Solid crib dock - destroys aquatic habitat, alters currents, can deflect erosion downstream.
9. Malfunctioning septic system - allows phosphorous and bacteria to leach into adjacent waterways.
10. Harmful household chemicals and cleaners - damage septic system and degrade water quality.

After

1. Prune trees rather than removing them; plant low maintenance native trees and shrubs to reduce erosion and absorb runoff.
2. Replace solid surfaces with porous materials where possible; redirect runoff into settling areas, away from the water's edge.
3. "Mow it high and let it lie" - leave grass 8 cm (3") high to retain moisture, mulch clippings for fertilizer.
4. Start a buffer - leave some grass uncut along the water's edge; restore with deep rooting native plants.
5. "Soften" your shoreline - improve erosion protection with native trees, shrubs, grasses and aquatic plants.
6. Create a "dry land" beach above the high water mark; let imported sand erode away naturally and native plants grow back.
7. Use a well maintained electric motor, or a 4 or 2-stroke engine that meets or exceeds EPA 2006 guidelines.
8. Remove solid dock - try a pipe, cantilever or floating dock, avoid treated wood; use public access where possible.
9. Replace and properly maintain your septic system - consult an expert.
10. Use environment - friendly products, or alternatives like baking soda and vinegar.

Step 2: Goals for the project

Prior to starting the naturalization of your shoreline, you will want to decide on two main things: first the type of human use areas you want on your shoreline and second the type of naturalization you are aiming for. Some of the elements you should consider are:

- Views you want to preserve or create
- Seating areas you want to preserve or create
- Recreation areas for children/adults
- Access paths you may want to keep or add
- Docks access and location
- Desire for certain types of plantings, e.g. native species, flowering plants, berry producing shrubs
- Interest in attracting birds or wildlife
- Overall density of planting desired
- Issues needing correction, e.g. erosion problems
- Location of services, e.g. septic fields or water lines

Deciding on these elements will help you when designing the layout of your landscape.



Step 3: Seek Expertise as Needed

As you undertake your project, it is advised that you obtain expert advice where needed. This could be from landscapers or from nurseries/greenhouses for advice on native species for your area and planting techniques. Engineers, professional biologists and landscape designers can also be hired to oversee the entire process if you have the financial resources for this.

Any regrading of shorelines will likely require professional advice in terms of ideal slopes and erosion prevention. For example, the ideal slope for shorelines has a ratio of 1:5 as this gradient is most effective for preventing erosion. Remember that you cannot alter your shoreline in any way (even for naturalization) without the proper municipal, provincial and federal authorizations.

Step 4: Application process

Shores and lakes are under many jurisdictions, so prior to commencing any shoreline naturalization it is important that you contact the appropriate federal, provincial and municipal (county/summer village/village) authorities to obtain the required permits based on who has authority on your shoreline (see listing below). Approvals might take a considerable amount of time, therefore it is recommended to start the process early - ideally in the fall so that you obtain all the required permits and authorization for the spring.

- From your property line to the high water mark is often municipal reserve, i.e. under municipal legislation
- From the high water mark to lake bed and shore is under provincial legislation, specifically:
 - Water Quality & Quantity – Alberta Environment
 - Lake Bed and Shore – Public Lands
 - Fish Populations – Sustainable Resource Development
- Fish Habitat & Navigable Waters are under federal legislation

You will only need to apply with Alberta Environment (using their combined form – see link in Appendix 1) and they will take the responsibility to forward your request to Public Lands/Sustainable Resource Development and to the Department of Fisheries and Oceans. These departments will contact you if they need further information.

The following is a list of the information required to accompany your application form:

- A letter stating:
 - What the proposal is
 - Why it needs to be done
- A location plan, which must include:
 - Proposed works in relation to property line
 - If applicable, any municipal reserve lands between the applicants property and the water body
 - Location of proposed works and the present, highest and lowest known water levels
 - If applicable, dimensions of the site (e.g. boundary of the area required to enclose the installation
 - Minimum plan size 21.5cm x 28cm

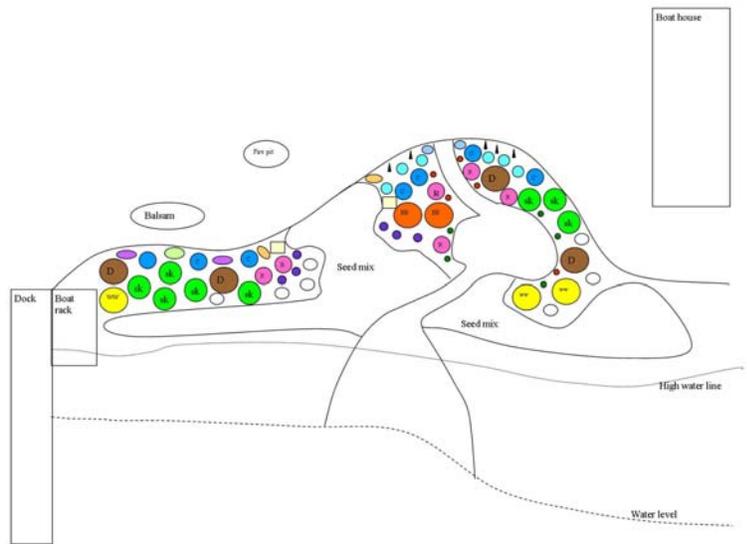
- Cross sections must show:
 - Existing conditions and proposed modifications
 - Relevant measurements
 - Minimum plan size 21.5cm x 28cm
- If available, a photograph or copy of a photograph showing the existing shore line

Step 5: Detailed Design

To guide the naturalization work, both in selecting/purchasing plants and for the actual planting day, it is preferable to sketch-out your desired plant layout and site features. You should always consider the mature height and width of the plants, shrubs and trees you are planting to ensure they do not outcompete each other. Don't plant too heavily the first year, let your selections grow a bit and reassess in later years to see if more plants are needed. As mentioned in step 3 you can refer to a plant nursery or books for ideas of native plants specific to your area and their mature sizes - see references listed in Appendix 2.

Aim for a design that is visually pleasing from all sides and that accommodates any landscape features such as paths, seating areas, benches, fire pits, play areas, dock access, etc.

Since some native plants may be difficult to acquire, it is a good idea to contact nurseries or greenhouses in the fall to pre-order your desired plants for the spring (see ANPC site listed in Appendix 1). You may also need to adjust your plan based on what is available.



Step 6: Planting day

Plan ahead, in order to have adequate numbers of volunteers and all the necessary tools!



1. Do not forget to schedule and book if needed a bobcat or any other machinery.
2. Order and schedule a delivery time for top soil, mulch and gravel if needed.
3. Ensure you have erosion prevention materials available, e.g. a silt fence, geo-textile membrane, jute netting.
4. Ensure you have enough helpers available.
5. Make sure you have enough planting tools for everyone.

Step 7: Maintenance

After the planting it will be important for you to water your new naturalized shoreline on a regular basis and keeping the area weeded to ensure your desired plantings have limited competition. You should plan to reassess your shoreline in following years to see if you need to plant additional plants to complete your naturalization project.



A completed project after one summer of growth

Appendix 1 - Web sites for reference

Alberta Environment – application form for shoreline alteration located at this site
<http://environment.alberta.ca/01189.html>

Alberta Native Plant Council (ANPC) – check list of nurseries/greenhouse to source native plants
<http://www.anpc.ab.ca/content/links.php>

Alberta plant watch
<http://plantwatch.fanweb.ca/>

Center for sustainable watersheds
<http://www.watersheds.ca/whatwedo/lbw.html>

Cottage Life
<http://www.cottagelife.com/>

Cows and Fish: Alberta Riparian Habitat Management Society
<http://www.cowsandfish.org/>

Fisheries and Oceans Canada – The Shore Primer
http://www.dfo-mpo.gc.ca/regions/central/pub/shore-rivages-pr/pdf/shore-rivages-pr_e.pdf

Landscape Alberta Nursery Trades Association
<http://www.landscape-alberta.com/>

Living by Water program run by the Federation of Alberta Naturalists (FAN)
<http://naturealberta.ca/alberta-natural-history/living-by-water>

Wabamun Watershed Management Council (WWMC)
http://www.wwmc.ca/about_background.htm

Appendix 2 - Books and publications

Landscape Alberta nursery trades association (2009) *Trees and shrubs for the Prairies*. Landscape Alberta Nursery Trades Association publication. (Good reference for determining mature plant sizes)

Hale, Greg; Ambrose, Norine et al (2005) *A field guide to common Riparian Plants of Alberta*. Cows and Fish program, Alberta. 63 pages ISBN: 0-7785-4067-7

Helbert, Sheldon (2009) *A Beginners Guide to Shoreline Ecological Restoration*. Edmonton, Alberta (see www.wwmc.ca web site)

Knowles, Hugh (1995) *Woody Ornamental from the Prairies*. University of Alberta ISBN: 1-55091-025-6

Moss, EH (1983) *Flora of Alberta*. University of Toronto 2nd edition ISBN: 0-8020-2508-0

Valastin, Pat (2001) *Caring for Shoreline Properties - changing the way we look at owning lakefront property in Alberta*. Alberta Conservation Association; Edmonton, Alberta

Wabamun Watershed Management Council (2010) *Shoreline Naturalization Project Seba Beach 2009-10*. (see www.wwmc.ca web site)

William, Sarah (1997) *Creating the Prairie Xeriscape*. University of Saskatchewan University extension press ISBN: 0-88880-357-5