They have led to artificial straightening and hardening of shorelines, and gradual infilling of shallow waters along the canal, with accompanying loss of valuable fish habitat and natural shoreline contours and landscapes.

- Vertical walls do not disperse the energy of waves and currents well. Most of the waves' energy is reflected directly back out into the channel or lake, while some of the energy also scours the bed of the water body, undermining the wall. Also, if the waves are high enough, they can slop over the wall, washing out soil behind.
- In comparison to properly installed rip-rap, vertical walls are more susceptible to damage from frost heaving and failure over time, especially if not properly engineered. They often require repeated maintenance that can be environmentally disruptive.
- They have a man-made look that is aesthetically displeasing to many people who see natural shorelines as a disappearing resource along this internationally recognized heritage canal.

For these reasons, **new** concrete, steel, wood, gabion basket, armour stone or interlocking brick shorewalls are generally **no longer approved** in or directly adjoining canal waters. We encourage you to contact the applicable Conservation Authority if you are considering construction of a vertical wall above the high water mark for their comments or any approvals that are required.

Shorewall repairs: Work on existing vertical walls is often allowed, especially if the repairs are limited to 25% or less of your wall, and no further encroachment into the lake or riverbed is involved beyond the outside face of the original wall. In some cases, a collar of rip-rap at the base of the wall may be required by canal staff.

Canal Rideau Canal

Of course there are always situations or considerations that may have been missed or not covered in this fact sheet. If you have a question or need something clarified, give us a call at

(613) 283-5170

Good luck with your project!

Aussi disponible en français

GUIDELINES FOR *SHORELINE STABILIZATION* ON THE RIDEAU CANAL

Any marine work on, over, in or directly adjoining the waters of the Rideau Canal (which also includes Dog Lake, Adams Lake & part of the Tay River) requires the written approval of Parks Canada-Rideau Canal Office. If your shoreline stabilization project includes any in-water work (repairs, removals, replacement and new works), you will need this approval. For a copy of the permit application form, contact:

The Rideau Canal
34A Beckwith ST. S.
Smiths Falls, ON
K7A 2A8
or by calling the Canal at (613)283-5170

In particular, we will require the following with your application:

- the current fee* ($53.50 for private residential applications);
- a photocopy of your deed and plan of survey;
- a description of your proposed project, including a list of materials and a sketch of your property shoreline, indicating the location of the project dimensions, approximate slope ratios, and any existing marine structures;
- directions on how to reach your property;
- the assessment roll number (the number on your tax bill with all the "0s")
- the lot and concession number, county, township and ward, and the civic (911)address; and
- your signature on the application.

*The fee indicated is correct at the time of re-printing in 2002, and is subject to change.

Please note: To help protect springtime fish spawning activity, no in-water work will be permitted between March 15 and June 30, in any year. To protect fall spawners, some Canal waters may have fall/winter restrictions.

If, after careful assessment of the erosion at your property, you feel that the problem justifies the expense of a project which will permanently alter the shoreline, there are several methods for you to consider:

Shoreline Vegetation (Bio-engineering): Leaving the shoreline vegetation intact is **the best first-line defence against erosion**. The root structure of woody perennial plants, i.e., shrubs and trees, helps to bind together the soil particles at the shoreline. Vegetation near the water filters & slows down rainwater runoff as it runs off the land into a lake or river, thus improving water quality. Also, aquatic plants left growing along a shoreline, such as cattails and bulrushes, reduce the potential impact of erosion from wave action and should be left alone.

To this end, we encourage landowners to avoid shoreline clearing as much as possible. A corridor of natural vegetation along your waterfront from the shoreline upland to a distance of 100 ft. (30m) is recommended, but if that is not possible, we ask that you leave or plant a strip at least 10 ft. (3m) deep. You do not need a permit from the Canal to plant trees and shrubs on your land above the high water mark, but if you are considering such a project, we may be able to help you, for example, in choosing plant species appropriate for your soil type, degree of slope, etc.

Rip-rap is presently **the preferred mechanical method of shoreline stabilization** where bio-engineering methods alone are unlikely to be effective. This is rock rubble placed along the waterfront over a geotextile filter fabric. Properly-installed rip-rap is usually the most effective, long lasting method used to break up the mechanical force of waves and water currents. The filter fabric prevents soil particles from washing out through the rubble, while allowing gradual percolation of ground water through the upland soils into the lake or river. This installation can and should conform to the natural shape of the shoreline. **It is a particularly effective method from an environmental standpoint when combined with native plantings.** Contact the Canal office for more details.

The rock used should be angular, and no less than 4 in. (10cm) and no greater than 18 in. (45cm) in diameter, depending on the location and the current and wave conditions specific to the site. Structure in this size range will normally enhance fish habitat by leaving spaces which trap sedimentation in the near shore area and provide cover and an invertebrate food source for fish fry and minnows. Any rock used in a rip-rap installation must be clean, imported stone - it may not come from the bed of the adjacent water body.

Rip-rap works best on a slope ratio of 3:1 (horizontal:vertical). It is not normally approved for a slope ratio steeper than 2:1 without professional engineering or geo-technical input. Situations where the bank is too steep will usually require cutting the bank back to create the desired slope, thereby avoiding the need to dump fill and encroach into the water. In such a case, we will need to consider questions such as:

- To what extent will the requested excavation disturb the existing vegetation, and is there any that should be preserved?
- What provision should be included in an approval for revegetation of the upland following the installation of rip-rap?

Where possible, rip-rap projects should be designed so that the rip-rap does not extend or encroach into the water. A significant degree of encroachment, if allowed, may require you to enter into a license of use or occupation with Parks Canada-Rideau Canal Office. There are, however, some situations in which a minor degree of encroachment below the upper controlled water level may be permitted without penalty. Two examples of such are as follows:

- to avoid unnecessary clearing of well-established, mature shoreline vegetation; or
- a small island subject to active erosion where there is very limited room between the shoreline and upland buildings.

Shorewalls (Armour Stone, Gabion Baskets, Wood, Concrete, Steel): Past practice with shorewalls (vertical retaining walls) has usually been to build a concrete or other type of wall directly onto, or to drive steel pilings into, the bed of the water body, and then to backfill behind. New vertical walls are actively discouraged along the canal for this and several other important reasons:.