

**Department of Environment and Local Government
Source and Surface Water Management Branch**

Bank Protection Projects

INTRODUCTION

The *Clean Water Act* requires, in part, that a person planning an alteration, as defined by the Act, to a watercourse or wetland and/ or within 30 metres of these features shall first obtain a permit issued by the Minister. The procedure for obtaining such a permit is set out in the *Watercourse and Wetland Alteration Regulation*, under the *Clean Water Act*.

The Department of Environment and Local Government (DELG) has adopted this operational practice to serve as supplementary information to the Watercourse and Wetland Alteration (WAWA) Technical Guidelines. The operational practice was developed to ensure consistent and transparent decision making while reviewing projects involving the installation/placement of erosion protection measures on the bank of a watercourse.

TECHNICAL INFORMATION

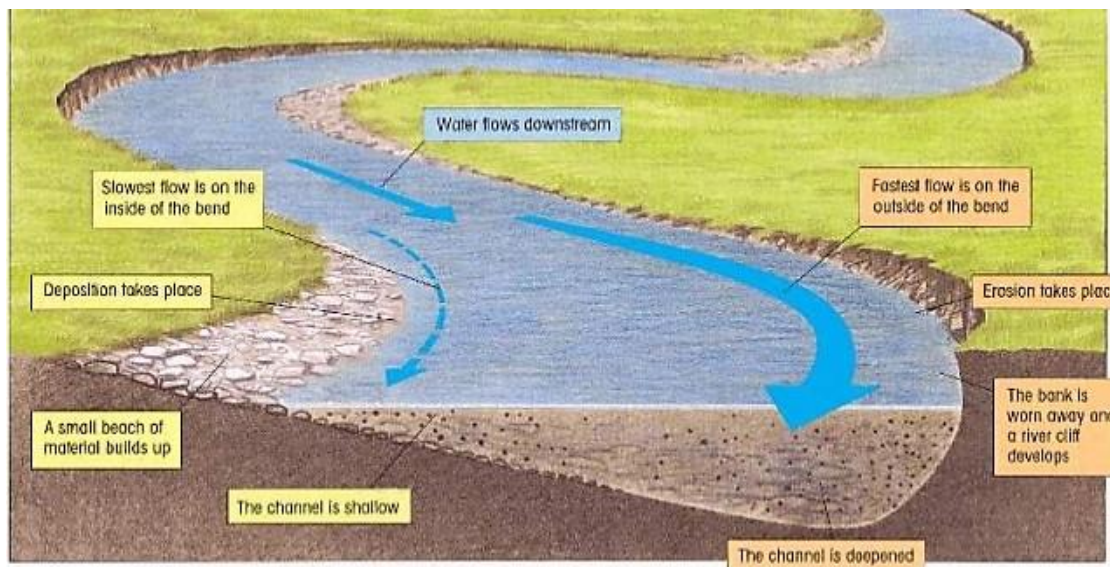
Natural movement of a flowing watercourse

Natural flowing watercourses meander (*i.e.* have bends – they are not straight). The process of erosion and deposits of materials, such as gravel/ sand bars and islands, is a natural process in the evolution of a watercourse. It is natural for bends, riffles, pools, and other features of a watercourse to change in size and location.

Taking this information into consideration, it is important to only apply erosion protection measures at the appropriate location and to the appropriate degree. Otherwise, the effects can have a significant impact to the system and may create/ accelerate erosion issues to neighbouring properties by distributing the energy of the water to a new location.

The inside of a bend is where the channel is shallower, and the flow is slower. This is where deposits (*i.e.* gravel/ sand bars) are more likely to form. Unless the watercourse has been artificially disturbed, there is no erosion at this location. Applying erosion protection measures at the inside of a bend will greatly disturb the natural flow of the watercourse and could cause additional problems downstream, creating a domino effect. Erosion naturally occurs on the outside bend of a flowing watercourse. This is also where the flow is fastest, and the channel is deepest, creating pools for fish to rest and cool down.

Figure 1: Meander of a flowing watercourse



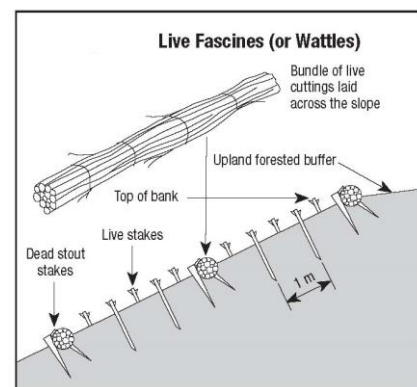
Erosion Protection Measures

Below is a brief description of the different types of measures used for bank erosion protection. Additional information can be found in the Guidelines. They are presented in order of the Department's preference.

1) Vegetation

Can be in the form of grasses, shrubs, trees, vines and live cuttings. Also includes live fascine (wattles), live stakes, and brush mattresses. A combination of a rock toe with vegetation above this layer is also an option.

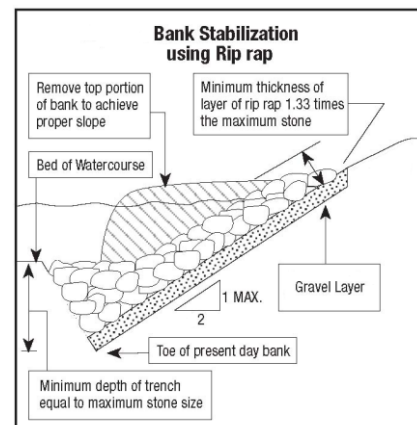
When erosion is occurring, vegetation should be the first option to consider while easing the steepness of the bank and creating a vegetated floodplain to disseminate the water flow and its energy. Instead of trying to stop the water from entering the land, the focus should be shifted to allowing the water to flow to its natural path, while protecting existing infrastructure.



2) Rip-rap/ armor stone

The placement of a layer of boulders, cobbles, or rock fragments placed over an exposed slope.

Some existing infrastructure may be too close to the bank of the watercourse, therefore creating a vegetated floodplain may not be a suitable option. In these cases, the placement of rip-rap/ armor stone may be a suitable option.



3) Retaining wall

Constructed out of wire baskets or cages filled with rock or timber crib, steel, or concrete.

Retaining walls are typically more expensive and the most intrusive method as they are often constructed nearly vertical, creating an abrupt disruption to the water flow which redistributes the energy elsewhere. Retaining walls should only be considered where the banks are excessively steep and there is not enough space to bring back the slope to apply other types of erosion protection measures. They can also be considered where wave or ice action is excessive.

WHAT YOU NEED TO KNOW

This section is divided into each type of erosion protection measure. Again, these are presented in order of the Department's preference.

1) Biotechnical bank stabilization

The placement of biotechnical products along an eroding bank of a watercourse and the planting of trees/ vegetation within 30 metres of a watercourse/ regulated wetland.

Design consideration:

- The slope of the bank should be no steeper than 2:1.
- If the proposed project includes rip-rap/ armor stone in the design and is greater than 30 metres in length, the project must be designed (signed and stamped) by a professional engineer licensed to practice in the province of New Brunswick.

2) Rip-rap/ armor stone

The placement of rip-rap/ armor stone along an eroding bank of a watercourse.

Design consideration:

- The slope of the bank should be no steeper than 2:1.
- If the proposed project is greater than 30 metres in length and/ or the proposed slope is steeper than 2:1, the project must be designed (signed and stamped) by a professional engineer licensed to practice in the province of New Brunswick.

3) Retaining wall

The construction of a retaining wall along an eroding bank of a watercourse.

Design consideration:

- A new wall or replacement of a wall must be designed (signed and stamped) by a professional engineer licensed to practice in the province of New Brunswick.
- The maintenance of an existing retaining wall will not require engineering plans, provided the alignment/ size of the wall is not modified.

Note: The installation/ placement of erosion protection measures on the bank of a watercourse will only be permitted if there is erosion present on the bank that could compromise existing infrastructure or the loss of land. If there is no erosion, the application will be refused.

APPLICATION REQUIREMENTS

All WAWA permit applications must be submitted using the online application program (<https://www.elgegl.gnb.ca/WAWAG/en/Home/Site>). During the application process, you will be able to upload all supporting documents for your project. You will need the following information when submitting your proposal:

-A project description detailing your project, which must provide the height of the bank and the length on the bank that the erosion protection measures are to be placed on.

-Photos showing the current state of the bank must be included with the application. If there are no signs of erosion, the application will be refused. If there are signs of erosion, the following drawings will be requested by the Department in order to continue the review process:

- For the placement of rip-rap/ armor stone on a length greater than 30 metres and/or in projects where the proposed slope is steeper than 2:1, the project must be designed (signed and stamped) by a professional engineer licensed to practice in the province of New Brunswick.
- For the construction/ replacement of a retaining wall, the project must be designed (signed and stamped) by a professional engineer licensed to practice in the province of New Brunswick.

Please note that during the review process, the Department verifies if there were previous permits issued for the same location. Therefore, applications of less than 30 metres linear that occur yearly in an attempt to circumvent the requirements for the drawings will still require these in subsequent years if the total application of the erosion protection measures exceeds this measurement.

-If you are not listed as the property owner as displayed through Service New Brunswick, you must include written consent from the landowner. Furthermore, if you are applying as a contact on behalf of the landowner, you must include written consent from the landowner to do so.

-Fees must be paid. Payment can be made online during the time of the application. However, if you choose to pay at one of DELG's office, you will have to pay with cash, cheque, or money order. Credit cards and debit cards are only accepted online.

NOTE: If your application is received by DELG with any of the above information missing, the application will not be formally accepted until all required information is provided. You will be advised that your application is on hold and will not be reviewed any further until all the missing information has been received.

LEGISLATIVE REQUIREMENTS

Please note that this document is not a substitute for the *Clean Water Act* or the *Watercourse and Wetland Alteration Regulation*, NB Reg 90-80. In addition, other agencies such as other provincial departments, the federal government, and local governments, may have requirements not addressed or included in this operational practice. This document may be reviewed and updated periodically as deemed appropriate by DELG.

INQUIRIES

For further information regarding the Watercourse and Wetland Alteration Program, please contact the Source and Surface Water Management Branch of the Department of Environment and Local Government at wawa@gnb.ca or 506-457-4850.