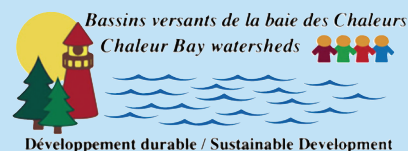




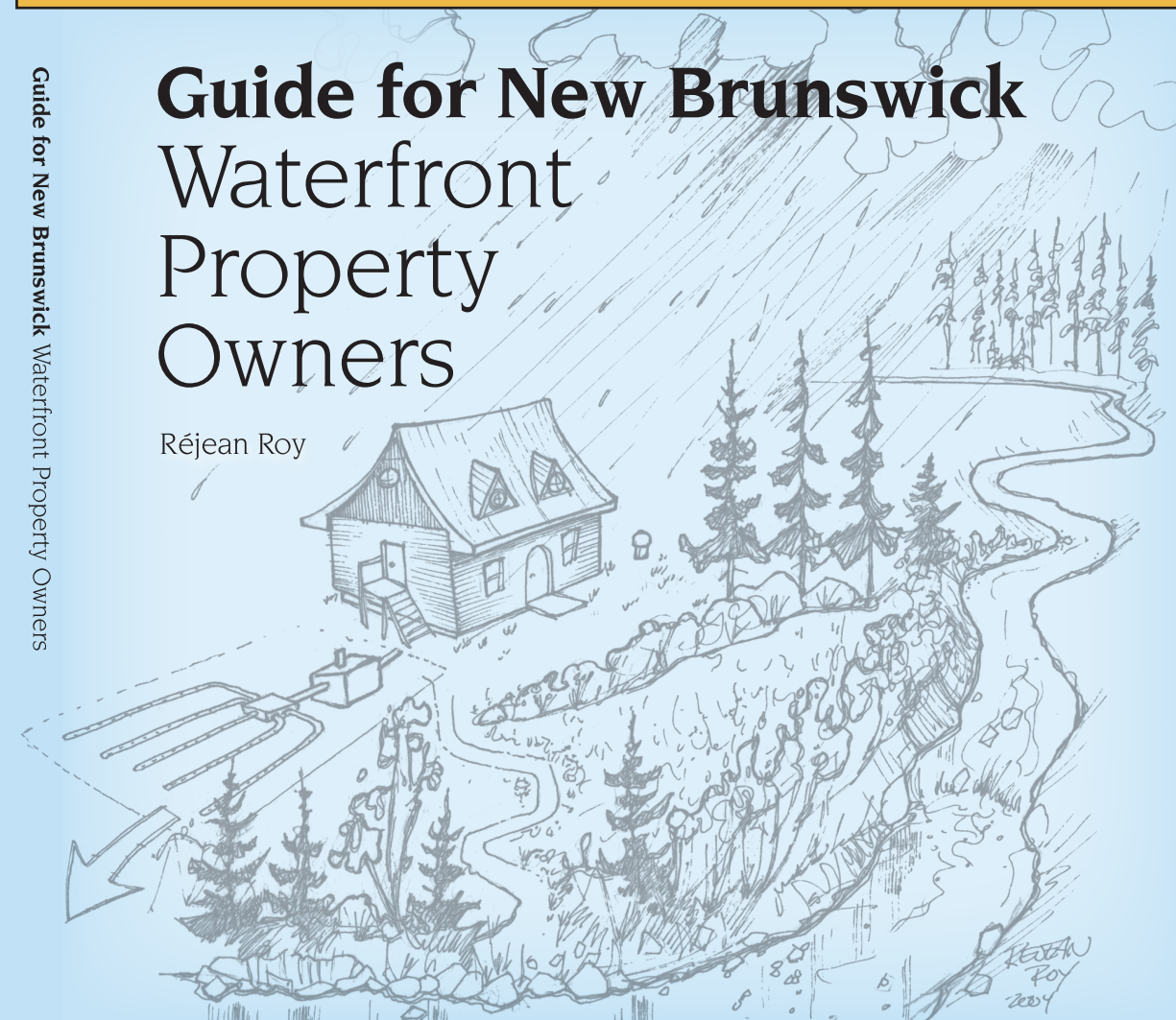
New Brunswick rivers are a provincial treasure. If you live near a watercourse, this guide will help you become more familiar with our natural resources and how you can protect them:

- ✓ How to protect your source of drinking water
- ✓ How to prevent potential health problems
- ✓ How to prevent erosion
- ✓ How to protect fish habitat
- ✓ Laws meant to protect our watercourses



Guide for New Brunswick Waterfront Property Owners

Réjean Roy



knowledge and protection
for our rivers

Preface

This guide is the result of and a follow-up to the Water Classification and Designation Program for managing watersheds that was established by the New Brunswick Government and implemented by the community. It's useful in developing action plans meant to block and prevent the deterioration of our rivers, lakes, and coastal waters.

Acknowledgments

This guide is the product of a direct or indirect collaboration with several stakeholders.

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Introduction

☐ Our relationship with our rivers

Watercourses—rivers, lakes, and the sea—have always shaped our lives. Water has influenced our history and economic development, and, because we need it every day, we have in turn affected the water that surrounds us. This guide takes a look at our present-day relationship with our watercourses.

New Brunswickers are increasingly aware of their impact on the environment and the fact they have a duty to protect it. They know that everyone must make an effort to preserve the environment.

This guide is a reference tool meant for those who appreciate and wish to protect watercourses, one of the essential elements of our environment. In it you will find the information you need to take care of the brook, river, or coast near your home. We hope that it will inspire you to be a good steward and increase your understanding of the laws and policies related to the protection of our streams.



Section 1



→ We all live in a watershed...

A closer look at our rivers

☐ Let's think about the watershed...

Before going any further, and to better understand how the average citizen can help protect our watercourses, let's take an in-depth look at a watershed. A catch basin (or watershed) is the area of land from which stemflow and seepage water are evacuated or drained before they return to a river.

A watershed generally consists of a network of rivers, brooks, and lakes

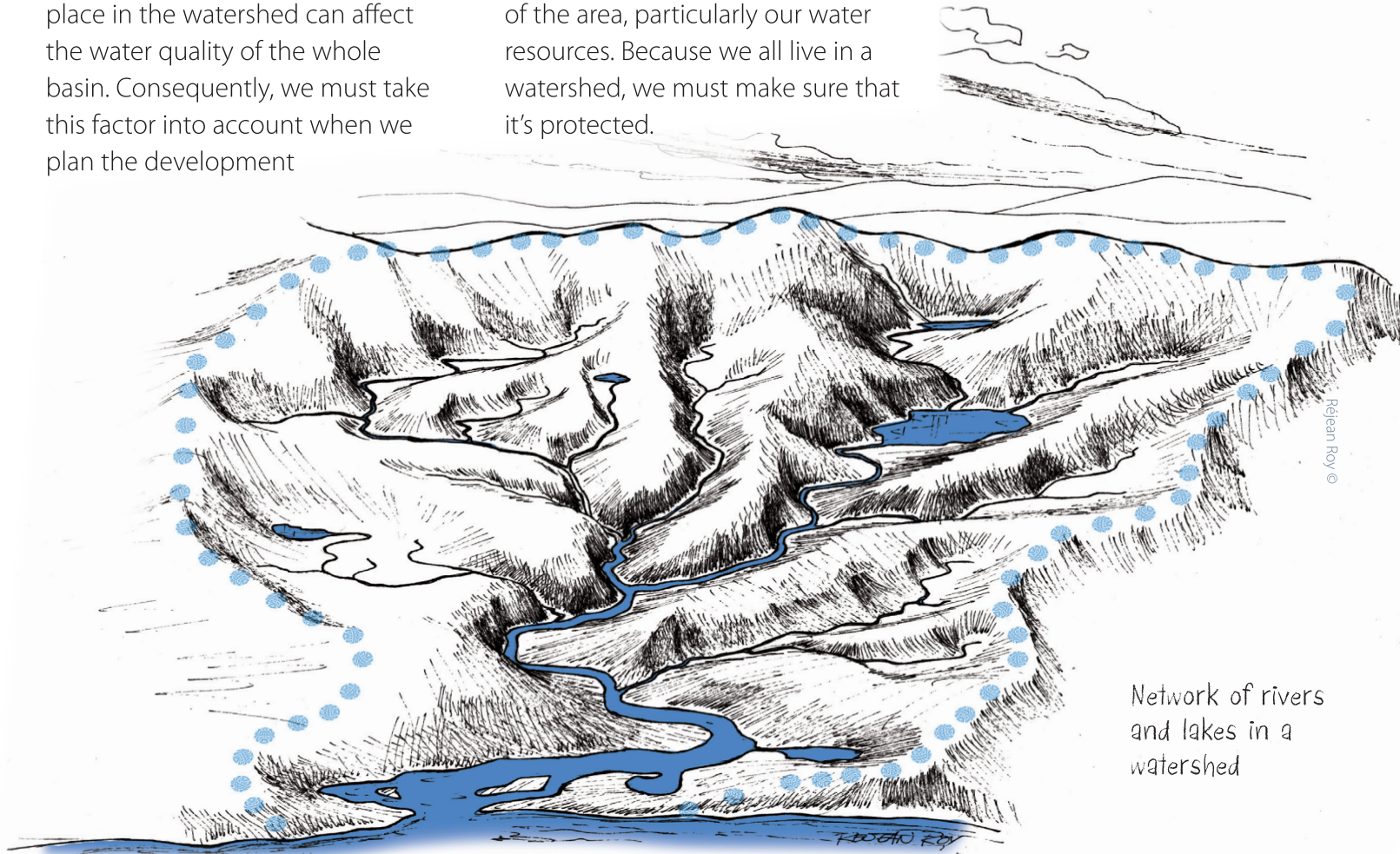
that all feed into a major river, which then flows to the sea. Each river has its own basin whose configuration is determined by its topography, i.e. the shape of the landscape. As a result, the basin is defined by the elevated terrain around its edges.

☐ What does a watershed consist of?

Because the streams in a single watershed are all connected in one way or another, each watercourse can have an impact on the rest of the basin. For example, if a watercourse is polluted for any reason, the rest of the downstream basin might become polluted by water flow. Any activity that takes

place in the watershed can affect the water quality of the whole basin. Consequently, we must take this factor into account when we plan the development

of the area, particularly our water resources. Because we all live in a watershed, we must make sure that it's protected.



Network of rivers and lakes in a watershed



Nicolas Roy, 7 years old

☐ Water Classification and Designation Program

This classification is used to assign realistic conservation goals to rivers while taking into account the necessary activities (industry, forestry, residential, etc.) in each watershed. The classification of watercourses allows us to provide for, for example, the protection of essential supplies of drinking water, sites restricted to leisure, wildlife habitat, sources of industrial supply, etc. This vision of the area, if properly followed, allows for economic development while still ensuring a supply of clean water for the future.

☒ Examining our rivers

☐ First step: Information collection

To classify the streams in a watershed, community groups composed of concerned stakeholders and citizens can undertake a campaign to collect data on the water quality of the watercourses and how they are presently being used.

Community groups carry out the watercourse classification process by first collecting historical information on water quality. Historical data of this type come from previous studies of water quality or fish habitat. The

groups then document the ways in which the area has been used by determining the location of any industries, residential areas, forest activities, etc.

During organized public consultations, the groups can identify some of the people's concerns about the watercourses. Their opinions can be taken into account when these watercourses are classified. As part of the program, hired technicians assess the quality of the samples taken from sampling stations along the watercourses.

Water quality measures are based mainly on the following parameters: the level of bacteria (coliforms), the dissolved oxygen in the water, and

the aquatic life, particularly insects.

☐ Second step: Information analysis

Using the data collected, the groups can classify each major stream in the watershed based on the following characteristics:

- **Outstanding natural waters (O)**
- **Designated drinking water supplies (AP)**
- **Lakes, ponds, and reservoirs not classified as O or AP (AL)**
- **Excellent water quality (A)**
- **Good water quality (B)**
- **Acceptable water quality (C)**

Examining our rivers: Information collection



1. Historical data on water quality



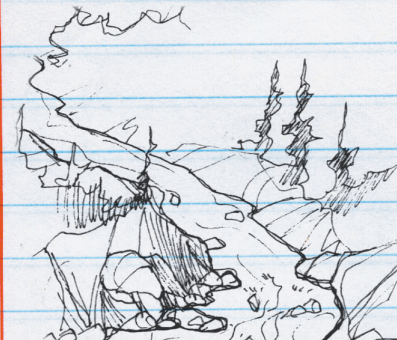
2. Our current water use



3. Existing data on water quality



4. Public consultation



Categories of water quality classification

Category	Description
E	Outstanding natural waters
AP	Water body especially designated for drinking water supplies
AL	Lakes, ponds, and reservoirs not classified as O or AP (AL)
A	Excellent water quality
B	Good water quality
C	Acceptable water quality

The table opposite outlines the water quality categories and the minimal adverse effects that justify assigning that designation.

As a general rule, the quality of river water is better in the areas situated in the highlands upstream. Obviously, as rivers flow to the sea, they pass through more populated areas and, consequently, their water quality reflects the effects of surrounding activities.

❑ Third step: Making it happen

One of the objectives of the Water Classification and Designation Program is to try to identify the factors or pollution sources that

affect the rivers and to propose an action plan to remedy some of these situations. Another is to attain the conservation goals established by the classification process.

An industrial park will affect the ecology of a watercourse, but the presence of houses all along the river will certainly have some repercussions on water quality. Malfunctioning septic tanks are often suspected or identified as one of the problems in watersheds. Another is the removal of riparian vegetation close to houses and cottages and the resulting erosion. Unregulated dumps scattered throughout our watersheds can also have a negative effect on water quality.

For more information on water classification or to find out if a classification has been carried out for your region, please call the New Brunswick Department of Environment, Sustainable Planning Branch Outreach and Partnering at (506) 457-4846.

The following section deals with stewardship, a way to rectify some recurring situations in New Brunswick.

The cost of water

In major urban centers, the cost of fresh water has become very high because of problems caused by encroachment and intensive land use. These problems can sometimes be very hard to solve if there are no established guidelines to protect drinking water sources in place.



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Section 2



Stewardship of our rivers

☐ A precious resource

When we understand the water cycle and our place in it, we become aware of the important role that we can play in protecting this precious resource. Current events and newspapers make it plain that clean and abundant drinking water, as we know it in New Brunswick, is a rare commodity elsewhere in the world, even in some areas of Canada. We must adopt or, in some cases, maintain habits that will allow us to preserve this clean water for our use and for the benefit of fish habitat.

This section is intended mainly for the owners of houses and cottages located close to rivers, lakes, ponds, marshes, or the sea. However, even if you live far from a visible body of water, you are always on top of a groundwater source. Some of the ideas presented in this section could also be useful to people who work in “small scale” forestry or own hobby farms.

☐ What do we mean by “stewardship” of our rivers?

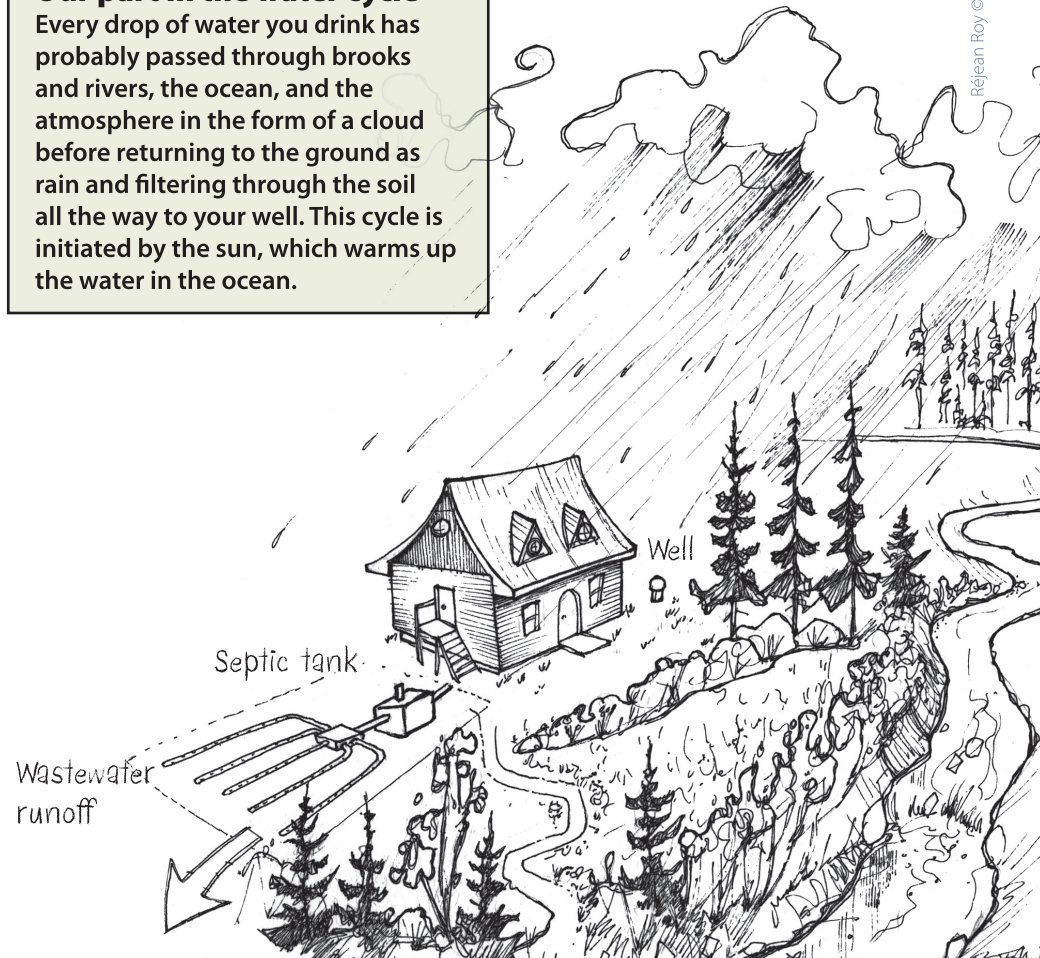
A steward is similar to a guardian whose responsibility it is to protect what was entrusted to him. The stewardship of our rivers means

using conservation and management methods that allow us to live here without damaging our precious resource. In addition to protecting the environment, these stewardship methods often improve and increase the value of our properties.

The management and prevention techniques and practices described in this chapter are simple ideas that require minimal amounts of time, money, and maintenance, which will hopefully make them attractive to those who own riverfront or oceanfront property. A well managed property that is in harmony with its environment retains its value and is less likely to suffer damage; it also allows its occupants to make the most of their natural surroundings.

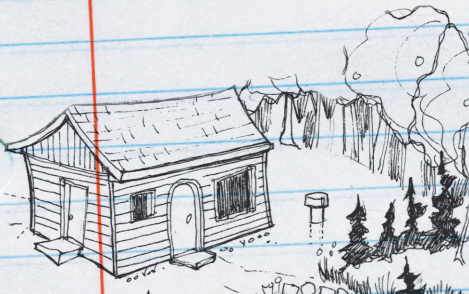
Our part in the water cycle

Every drop of water you drink has probably passed through brooks and rivers, the ocean, and the atmosphere in the form of a cloud before returning to the ground as rain and filtering through the soil all the way to your well. This cycle is initiated by the sun, which warms up the water in the ocean.



To protect my river and my property:

- ✓ 1. I will maintain a strip of natural vegetation along the river;
- ✓ 2. I will maintain and monitor the condition of my septic tank;
- ✓ 3. I will check the condition of my well;
- ✓ 4. I will avoid wasting water and reduce the amount of chemicals I use.



☐ How to secure the stewardship of a property

In this guide, we approach the topic of water protection from the four most common angles:

A strip of riparian vegetation (a buffer zone) along the length of the river; this prevents or reduces the effects of erosion and protects the watercourse.

A septic tank; it must be functional and in good condition.

A properly installed well; wells must be designed to avoid contaminating the groundwater. Monitoring the quality of our water makes us aware of our continuing need for drinking water.

Conscientious use of water and household chemicals; there is always a risk that chemicals might contaminate a nearby watercourse or even the groundwater.

It's often relatively simple to protect a watercourse, but prevention is always a better option.

Because malfunctioning septic tanks are often a source of pollution in our watersheds, your septic tank should probably be your main stewardship priority. Another very important component of stewardship is to maintain a strip of natural vegetation along watercourses to prevent erosion and protect the quality of the water for humans in general and

for the fish habitat. This buffer zone also decreases the risk of flooding. Naturally, if you have your own domestic well, make sure to include the source of its drinking water in your stewardship plan.

■ The buffer zone or strip of riparian vegetation

□ An ally for your property

People often decide to build or live close to a watercourse so that they can take advantage of the view of the brook or the lake. However, we sometimes go a little too far in our efforts to get a view of the stream unobstructed by bushes or trees.

This sometimes has negative consequences. The river is alive; it swells in the spring and may change direction over the years. These whims of nature mean that we must treat the watercourse with a certain amount of respect, and the first thing to consider is the buffer zone.

Everyone who lives near a watercourse should make the buffer zone his or her management and maintenance priority. In some areas, riparian vegetation is an important ally against erosion. There are economic and obvious aesthetic advantages to taking good care of the buffer zone.

Permit to modify a watercourse

Before carrying out most types of development or modifications near a watercourse, you must first request an alteration permit from the NBDE. However, be prepared for a certain amount of delay in the planning of this work. Annoying as the delay may be, a review by the NBDE could help you avoid expensive mistakes. Meeting with an agent will not slow down the project and will probably allow you to modify or even improve a new development. See Section 3.



What does a buffer zone do for us?

1 - The buffer zone helps to control the phenomenon of erosion. A soil denuded of vegetation is unstable and often more susceptible to erosion.

2 – The numerous roots of riparian vegetation act as a sponge and reduce the risk that contaminants will flow directly into the watercourse.

3 – A buffer zone along a river protects fish habitat.

☐ **Watercourse Alteration Permit**

To develop or alter waterfront property, you must first request an alteration permit from the New Brunswick Department of Environment (NBDE). However, you should expect a certain amount of delay when planning this work. As annoying as that might be, the NBDE exam could help you avoid expensive mistakes. Meeting with an agent will not slow down the project, and it may even allow you to modify or improve a new development. Please see Section 3.

☐ **What is a buffer zone?**

A buffer zone is a strip of

undisturbed natural vegetation along a watercourse. It consists of trees, bushes, and ground vegetation such as ferns, graminaceous plants, moss, and wild flowers. Tree trunks, branches, and logs carried by the current, as well as rocks and stones, also form part of and play a role in the buffer zone. Plants of this type are specifically adapted to flood-prone areas and typical of a riparian environment.

☐ **What is the role of a buffer zone?**

A buffer zone has two functions: It protects both your land and the watercourse close to or on your property.

Protection of your land:

Vegetation, because of the numerous roots of trees and shrubs, holds the ground together and helps to counteract the natural erosion effects of rainwater, currents, and waves. A well established buffer zone in good condition will prevent or slow down soil losses.

Watercourse protection:

The buffer zone not only protects the watercourse against the adverse effects of sedimentation, but also forms an absorbent screen that will reduce the runoff of pollutants from a malfunctioning septic tank or a chemical spill.

☐ The phenomenon of disappearing vegetation

As time goes by, we often try to “neaten up” a buffer zone to get a more unobstructed view or better access to our watercourse. We replace natural vegetation with grass all the way to the water. Without realizing it, we sometimes suppress the vegetation to the point that it can no longer hold the soil. In such cases, erosion problems will soon become evident.

Accelerated erosion effects are an indication that the buffer zone has been opened up or thinned out too much, and that it’s no longer efficient. When your land has already started to erode, it’s hard to

What if you mow your lawn all the way to the watercourse?

A lawn that is mowed doesn’t retain the soil properly, and the site becomes susceptible to erosion. Here, the sun’s rays fall directly on the water and warm up the stream.



Réjean Roy ©

counteract that using natural means. It can sometimes be extremely hard to restore a buffer zone.

Furthermore, when there are signs of erosion, instead of restoring the buffer zone we sometimes go to great lengths and build expensive structures to control erosion. Consequently, we replace the natural system with structures that prevent the buffer zone from playing its full

ecological role.

□ An efficient buffer zone

The buffer zone is efficient when it's dense and covered with native trees and shrubs, i.e., those that grow naturally in the area. Ideally, it should consist of a strip 30 m wide as measured from the upper flood limit of the lot. This may seem excessively deep, but a buffer zone of that size makes it possible for the plants to carry out their multiple functions.

An efficient buffer zone must shelter a variety of species: mosses, ferns, forest plants, shrubs, and trees of various sizes. Alders and other types of brush are very important for retaining the soil. The

My lot is too small!

If your property has already been stripped of its natural vegetation and is too small to establish a buffer zone as recommended, or if your home or cottage is within 30 m of the water's edge, the idea of a buffer zone might strike you as impossible or simply irrelevant. Don't worry. Whatever the size of the natural zone along

the watercourse, it will benefit both your property and local wildlife. Your house can even be integrated into the vegetation zone, whose trees and shrubs will act as a screen to protect it from high winds. You don't have to try to restore a whole forest in a single day. Start with just a few trees, and then go where it leads you.

soil can't be compacted or denuded by asphalt or roads of hard-packed ground. These hardened surfaces reduce the ability of the buffer zone to retain sediments and rainwater carrying pollutants from houses.

If you live close to a marsh, the 30-m buffer must be measured from the first trees of the forest. The marsh, which probably contains emergent vegetation such as cattails, reeds, and other weeds typical of this environment, is an addition to the buffer zone but not part of it. If you're not sure where the marsh ends and the forest begins, contact a biologist or a wildlife technician.

If your property is located close to a fragile habitat such as a saltwater or

freshwater marsh, it might be a good idea to make your buffer zone even larger. Also, if you live close to the sea, your must take into account the strength of tides and storms.

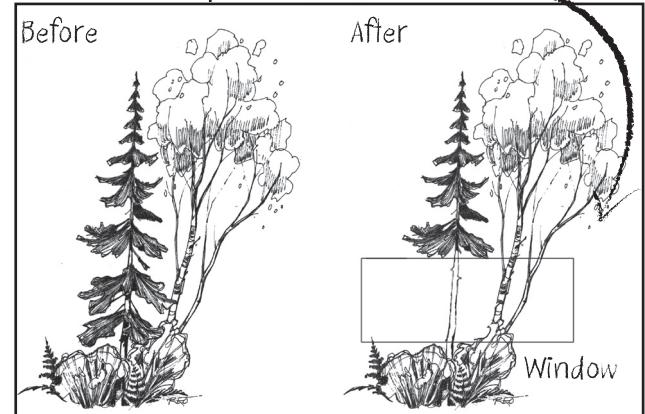
☐ How do you get the most out of a watercourse?

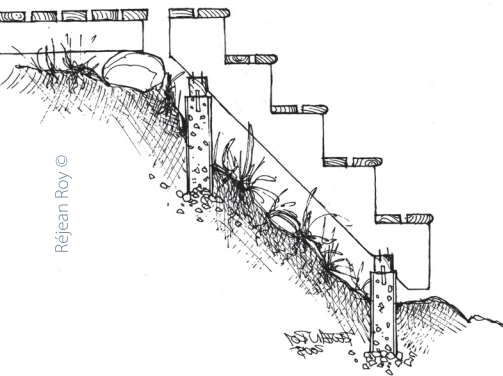
If you live close to water, it's almost certainly because you want to enjoy the view of the river or the sea!

Pruning

It's always possible to clear the view from a window overlooking a watercourse without cutting down trees and reducing the

Open up your view by pruning





Stairs mounted on concrete piers will prevent trampling and erosion.

effectiveness of the buffer zone. If your vegetation strip shelters mature trees, you can prune a few of them, i.e., cut a certain percentage of branches starting from the bottom up. Whenever possible, you should leave the bushes and groundcover untouched. Pruning between the trees and bushes will open up a window for viewing the watercourse. The best time for pruning is late fall or early spring.

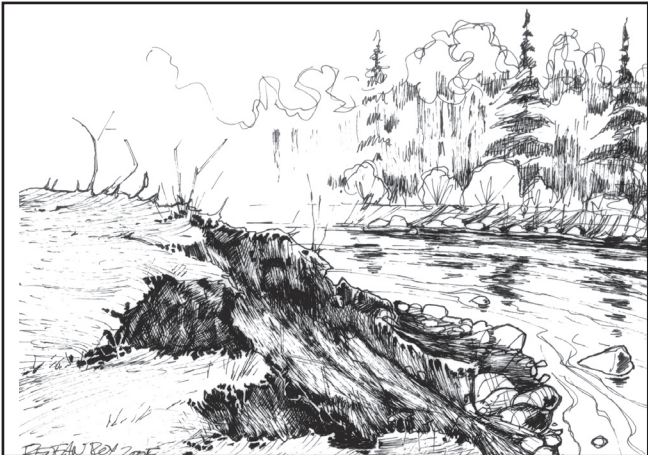
Trails

Developing a trail will help confine foot traffic to a specific area, thus protecting the rest of your buffer zone.

Take the following into account when you open up access to an area:

- Avoid building a trail that cuts through the vegetation in a straight line. A trail that runs at an angle or one shaped like an “S” is a better option.
- If the lot is on a medium slope, sink some pieces of wood into the soil at an angle to divert rainwater.
- If the slope is abrupt, build stairs with a landing at the bottom. Stairs are safer, and plants can grow under them and prevent erosion at that site.
- Ideally, stairs should be built on concrete piers, rather than buried directly in the ground. That will make them last longer.

- If you live by the sea, build an elevated boardwalk to protect the sensitive vegetation in that environment and prevent people from trampling all over the area.
- Finally, leave a few centimetres between boards to let the water filter through and into the ground immediately below.



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Lookouts

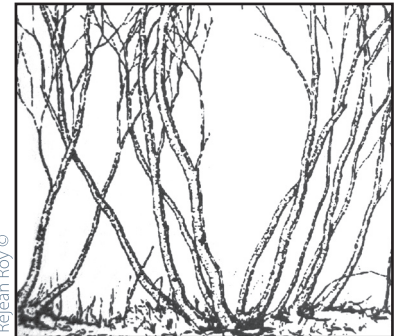
When you build a lookout, make sure that it has a minimal impact on the buffer zone and that it's situated far enough from the water. This type of structure should be elevated if possible so that plants can grow underneath it and retain the soil in that area. Contact the Department of Environment to find out if you need a permit before you start construction.

☐ Erosion in the heart of the forest

If you drive on forest trails in a 4x4 or an ATV, you've probably noticed eroded spots on riverbanks. This type of erosion could be caused either by a poorly planned forest activity, the

Grey alder

The grey alder is a very common species in our riparian buffer zones. Although it is sometimes considered undesirable, this shrub is very useful in preventing the erosion of riverbanks and also provides shade for the trout in small streams. The generic designation *Alnus* is the classic Latin name; it is derived from the Celtic and means "river neighbour" (Source: *Flore laurentienne*, frère Marie-Victorin).



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ATVs

Many of the province's ATV clubs promote the responsible use of trails and respect for the environment. If you are into ATVs, ask about this at your local club. Sticking to the trails helps avoid the formation of new areas of erosion.

Because they are lighter, ATVs are less harmful to forest trails than 4x4 trucks. However, no vehicles are allowed to drive on wetlands.

→ Fords, which are shallow spots in the river with a solid bottom, must be approved by the Department of the Environment.

bare banks in front of a cottage, or too many crossings at a particular ford.

Forest activities

A Watercourse Alteration Permit must be obtained from the Department of Environment before cutting a tree within 30 m* of a watercourse or operating heavy machinery within 15 m* of a watercourse.

Bare banks

A Watercourse Alteration Permit must also be obtained before clearing the privately owned property in front of a cottage to open up the view. The owner will be allowed to clear out brush to a maximum width of 6 m*. However, this rule does not apply to harvesting trees of commercial size. It

is also forbidden to uproot or remove the humus layer within 30 m* of a watercourse.

Fords

If you must cross the river, use a ford that has already been established and approved by the Department, and avoid crossing when the water is high. Cross slowly and in a straight line to minimize the formation of waves, which increase bank erosion. (See box: How to improve a ford.)

*The distances mentioned do not apply to watersheds that supply drinking water, which are protected by law (see the section on the Watershed Protected Area Designation Order).

□ How to restore and maintain a buffer zone

It's relatively simple to restore a buffer zone because all you need to do is let nature take its course. If your property was altered in the past and, for example, there is now grass along the edge of the water, the first step consists of simply not cutting the strip beside the water. Before long, natural vegetation will reclaim its rights and benefit your property. Shortly after that, shrubs and trees will take root. Natural land reclamation greatly reduces the amount of work necessary to constantly maintain a lawn. When you take a look at what grows on the surrounding shoreline (if you are

Harmful effects of dams

Adult fish migrate to reproduce, find food, escape predators, and locate deeper hibernation spots when winter comes. The construction of a dam from rocks and logs prevents fish from swimming freely and finding what they need to survive.

In addition, dams have a tendency to divert the current. As a result, the current accelerates the erosion of the surrounding banks, which creates sedimentation problems in the watercourse.



Réjean Roy ©

Before



Restore a buffer zone with the help of wild plants and other shrubs.

After



Réjean Roy ©

located close to the forest), you will see the same species that will grow on your property.

The advantage of the indigenous or native species that will take root is that they will require very little maintenance once they are established. They can protect themselves against local diseases and insects and find all the nutrients essential to their survival in the ground itself. Finally, some bushes or shrubs can be very decorative, especially fruit trees; they attract birds and are becoming increasingly popular in landscape design.

To accelerate the process, you can always replant selected native shrubs and trees. Some species are even

available in garden centres. Make sure that the species you choose are adapted to the environment.

☐ Already existing erosion issues

If there are already signs of erosion caused by the absence of vegetation, you might have to take more direct action, such as planting bushes. Before you try to stabilize a bank, find out what's causing the problem.

In cases of extreme erosion that is a danger to buildings or personal safety, you will have to consult an expert to determine the best procedure to follow or technique to use. It's essential that you contact the NBDE before carrying out this

project. (See section on laws and boxes on techniques to restore a buffer zone.)

☐ Living close to the ocean

If you live very close to the ocean, you have almost certainly noticed that the establishment of a buffer zone alone can't defeat the power of a storm. A few bushes are not enough to minimize the damage caused by the elements.

In former days, people built away

Is your grass dry and yellow where it borders the ocean or marsh?

If your property ends at a marsh or beach, you might find it hard to keep your grass green in certain areas. This is sometimes the case along a breakwall.

It could be that the grass at the edge is too exposed to the elements and has problems retaining moisture. It might also be feeling the effects of

saltwater and sea air.

Grass really doesn't belong on a saltwater shore; it should be replaced by denser natural vegetation. A strip of dense, indigenous vegetation will hold moisture better and protect the rest of the lawn. Wild flowers are beautiful and blend well in a landscape design.

from the sea. The only buildings constructed near the beach were small, temporary cabins for fishermen. People who built close to

Green pastures in town?

A buffer zone can also be established in any village or a town that needs a screen of natural riparian vegetation.



Réjean Roy ©

Advantages of the buffer zone	How?
Protection of water quality	- o The buffer zone filters toxic substances and other pollutants such as pesticides, fertilizers, and bacteria from a disposal field. - o Vegetation helps keep the water clear (transparent) by trapping soil particles. - o Natural vegetation doesn't require the use of fertilizers or herbicides, thus protecting the watercourse from products that are potentially harmful to the water. - o The buffer zone helps to retain moisture in the soil.
Protection against erosion	o The roots of natural vegetation hold the soil together and prevent or reduce soil losses caused by currents, waves, rainwater, or snowmelt.
Protection of property value	- o To a certain extent, the buffer zone helps property hold its value by protecting the quality of the water and preventing erosion along the watercourse. - o The buffer zone helps protect buildings and trees from the effects of the wind, water, and streams of saltwater if you live close to the ocean.



Protection against flooding	- o The vegetation, logs, and rocks close to a watercourse slow down flowing water and minimize the damage it can cause. - o The buffer zone acts a sponge by helping the soil to be more absorbent, thus reducing the impact of flooding.
Protection of fresh water reserves	o The buffer zone helps the soil to retain water during fall, winter, and spring. In dry weather, the soil releases this water.
Quality of life	- o In the summer, trees and shrubs provide cool shade; in winter, they protect against the wind. - o For those who love their privacy, the perimeter of vegetation acts as a visual screen and reduces noise. - o Natural landscaping provides a setting that lets you enjoy the cycle of the seasons and the beauty of nature.
Wildlife protection	- o Riparian vegetation provides nutrients and shelter and protects fish spawning grounds. - o The vegetation and trees arching over a watercourse provide the shade needed to keep the water at a temperature that is comfortable for fish. - o Terrestrial wildlife uses these buffer zones as corridors to move from one habitat patch to another and to access water.

Wild roses

The Virginia or wild rose is a shrub that adapts well to the seashore. It thrives on different types of soil (from sandy soil to gravel) and can even be buried by sand. It's also a beautiful bush!

There are many species of roses ranging from the exotic to the primitive. Look for species that are native to our area. Wild roses can easily be propagated from cuttings, and small bushes are available in pots at most local garden centres.



Réjean Roy ©

the ocean were needlessly exposing themselves to bad weather, cold temperatures, and stronger winds. In addition, their houses didn't last nearly as long. Today, with modern materials and our desire to find a place to relax, we build much closer to the sea and sometimes we have to suffer the consequences.

When the buffer zone is very narrow or nonexistent, the effects of tides and waves are more direct. And because it's almost impossible to restore buffer zones on properties that are right next to the ocean, the only solution is often to build a breakwater, which has long-term consequences. The power of the tides is simply sent in another direction, and more often than not,

the result is increased erosion on both sides of the wall.

Nor should we forget that the rise in the sea level has been well documented. The dunes and banks close to the sea are in constant movement. Therefore, it might not be a wise long-term investment to build a house too close to the sea or too exposed to the elements. Also, drinking water is harder to find close to the ocean and is easily contaminated with salt water. The only viable solution is to plan all construction at a reasonable distance from the sea and maintain a large enough buffer zone.

□ A buffer zone in a shorefront environment

If your property lies on the sandy soil near the sea, you've probably noticed how sensitive the vegetation is to trampling. Dunes are a fragile environment in which plants find it hard to take root because of the instability of the soil caused by winds and tides.

Because saline environments attract only those plants adapted to them, you must take that into account when you plan to plant new shrubs. When the time comes to restore a buffer zone, you must consider the environmental conditions.

In an environment that is fragile

and susceptible to trampling, it will probably be necessary to fence off the area to prevent people from coming and going on some sections of your property. This gives nature a chance to re-establish itself on its own. Afterwards, the vegetation will help to retain sand and may even solve the erosion problem. Thanks to its network of roots, Marram grass plays this role efficiently.

□ The breakwater

Although sometimes a breakwater or breakwall seems to be the only viable solution, these structures are not recommended because they damage the habitat, accelerate erosion, and eliminate the beneficial effects of a buffer zone. However,



Réjean Roy ©

A strip planted with Marram grass.

Some ways to restore a buffer zone

Option 1

The least expensive solution consists of letting vegetation grow naturally on its own, or, if you have grass, to stop mowing the strip at the shoreline. To accelerate the process, transplant a few selected trees or shrubs from another site or buy them at a garden centre or a commercial nursery. You can also obtain trees from a site that is being cleared for development.



Réjean Roy ©

Option 2

If your lot is on a slope, cuttings heeled deeply into the ground will help to stabilize the lower layers of soil. Willow, dogwood, and balsam poplar are all species that are well adapted to this type of propagation.

The recommended size for cuttings is two or more centimetres in diameter and approximately 1 m long. They should be removed when the parent plant is dormant, i.e., in late fall or early spring. So that the cuttings don't dry out over the winter, place them in a plastic bag (with a few air holes to prevent them from rotting) and keep them fresh in the snow. About 10 days before you plan to plant the cuttings, put them in a bucket of water. This will give them a head start, and they will have more tolerance for drought.

If the bottom of the cutting is shaped like a wedge, it will be easier to plant it by just pushing it into the ground. If the soil is too compact, dig a hole with

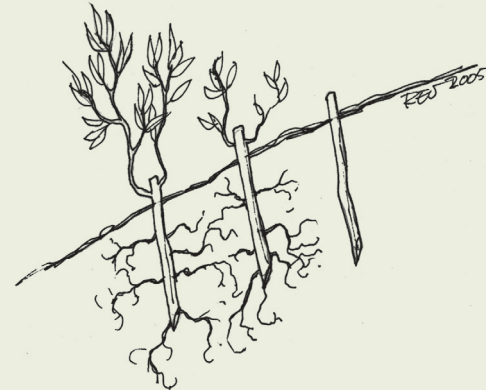
a metal rod. If the cutting is heeled in properly, it will form deep roots and hold the soil together more efficiently. The best time to plant is in the spring.

Option 3

Willows are also recommended to stabilize a bank that is eroding. These species are often used in southern New Brunswick and elsewhere in Canada.

Why choose willow?

- Willow thrives in wet and swampy



areas in which the ground is frequently flooded, e.g., along a watercourse, on a flood plain, or on a lakeshore.

- It is easily propagated by cuttings.
- It grows quickly.
- It produces numerous roots that help to retain the soil.

Its numerous trunks slow down the current, thus reducing the impact of flooding.

What species of willow should I choose?

There are more than 75 species or varieties of willow in North America. Most grow no larger than a shrub. The pussy willow (*Salix discolor*) is a very common variety throughout northern New Brunswick. Unless you already have willows on your property, you should give serious consideration to buying seedlings at a nursery or a garden centre.

Ways to plant willow

Willow seedlings must be planted in the spring. Plant the seedlings about 1 m apart in rows parallel to the watercourse. The first row should start just below the flood line, with each subsequent row further away from the water. Nature will rapidly take over and stabilize the bank. The best way to manage them is to give them time to grow.

Caution: Avoid planting willows close to a septic tank. The roots will invade the pipes and block the ducts.



Réjean Roy ©

A variety of willow

Some ways to restore a buffer zone (continued):

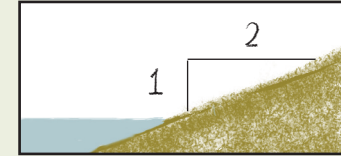
We sometimes recommend using a geotextile such as jute to stabilize a bank. It will hold the soil together until plants can root and take over this function. Geotextile products such as Geojute® prevent erosion and soil loss, and they are biodegradable. Another option is a net that will allow

you to plant seedlings in the holes in the mesh.

If the slope is too steep, you will probably have to reduce the angle of inclination if you intend to use plants to prevent erosion. For example, for willow, the ratio of the recommended slope is 2:1 (a slope twice as long as it is high). Please see the illustration on

this page.

There is a wide variety of geotextile products. Contact your retailer or your landscaper to determine the type of textile that is best for your project.



Recommended slope of 2:1

Before



After

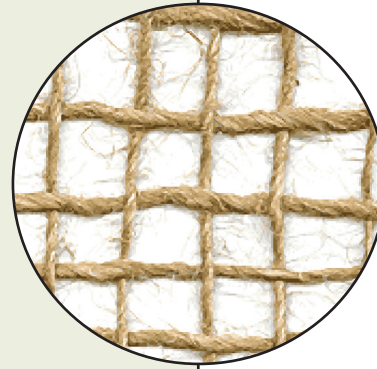


Photos: Petittcodiac Watershed Monitoring Group

Fords

Every watercourse has natural fords, but they often need to be improved. The approach to a ford can be stabilized using clean crushed rock on top of a geotextile.

However, to protect fish habitat and maintain water quality, you should consider building a culvert or a bridge.



A type of jute



→ When Requesting a Watercourse alteration permit, ask the Department of Environment to send you information about different structures for crossing brooks.

Photo: Friends of the Kouchibouguacis

Case study: ATV bridge across the Tedish River

The slopes of the approaches to a bridge are sometimes susceptible to erosion caused by rainwater and should be stabilized. The Cap-Pele Watershed Group used several anti-erosion devices.



Silt boxes

As you can see from their name, silt boxes are used to collect sediment. The concept is simple: When water containing sediment flows into the boxes, they act as temporary reservoirs. The sediment sinks to the bottom of the box, and the water is absorbed and filters naturally into the soil. This technique has two functions: It decreases the amount of water on the road while at the same reducing soil erosion and the quantity of sediment flowing into the river.



The box we installed is located right inside a canal into which water flows naturally.

Water deflectors

Two water deflectors were installed on the slope. They consist of a 12-ft (3.6-m) board placed on a geotextile fabric. The boards extend a few inches above the ground to divert water to the sides of the road. The three advantages of this are that the water is directed toward a silt box, the speed at which it is flowing is reduced, and the amount of flowing water is decreased.



Drain

A 28-ft (8.5-m) drain was installed at the foot of the slope. The drain, whose edges are slightly above the ground, acts first as a long water deflector. If water manages to pass over the lip of the drain, it will be evacuated by the drain itself into the woods along the side of the road. The vegetation there acts as an ideal filter for collecting sediment and absorbing water.

Crushed rock

We put down a layer approximately 1 ft (30 cm) thick of pieces of crushed rock measuring 3 to 6 inches (7.6 to 15.2 cm) in diameter on the sloped section of the road. Crushed rock impedes erosion in several ways: it reduces the speed at which water flows down the slope, protects the ground from rainwater and ATVs, and collects some of the sediment that would otherwise end up in the river.

Source and photos: Cap-Pele Watershed Group

→ For more information on anti-erosion techniques, join one of the groups dedicated to protecting the local watershed. Many of the techniques suggested above were developed through trial and error by local people who wanted to improve the condition of their trails, shoreline properties, and rivers.



Wildlife habitat ...

Buffer zones provide essential habitat for wildlife in general, and particularly for fish.

To survive, fish need a habitat that provides the following:

- a spawning ground
- food
- shelter
- water of good quality

☐ **Buffer zones help to create fish habitat by keeping spawning grounds clean:**

Why is this important for fish?

Salmon and trout need clean, sediment-free gravel for spawning and egg incubation. Excessive sediment in the water can be deposited on the gravel. When the spaces between the gravel are blocked by sediment, water rich in oxygen can't reach incubated eggs; they suffocate and die.

How can we help keep spawning grounds in good condition?

The vegetation of a buffer zone filters out the sediment carried by rainwater. Clear-cut areas don't have to be right next to the water for the spawning ground to become clogged with sediment. The cumulative effects of the houses along the stream are often enough to compromise the quality of a spawning ground. Another advantage of vegetation is that it filters out some of the pollutants and organic contaminants (e.g., bacteria) before they reach the water.

☐ **Buffer zones help to create fish habitat by ensuring water freshness:**

Why?

Salmon and trout need fresh water. When the water temperature rises, the water contains less oxygen, which stresses the fish.

How?

Trees and shrubs growing along the banks shade the watercourse and help keep the water at a temperature that is acceptable for fish. Once again, the cumulative effect of the openings in the vegetation along the stream is an increase in the temperature of the entire brook or river, and the fish population is less likely to survive.

☐ **Buffer zones help to create fish habitat by providing food:**

Why?

The buffer zone provides the food that fish require.

How?

Fish feed on the insects they find at the bottom of the stream or on overhanging riparian vegetation.

Riparian vegetation prevents sediment from covering the riverbed and destroying colonies of aquatic insects and other invertebrates (macrobenthic invertebrates).

☐ **Buffer zones help to create fish habitat by creating shelters and rest areas:**

Why?

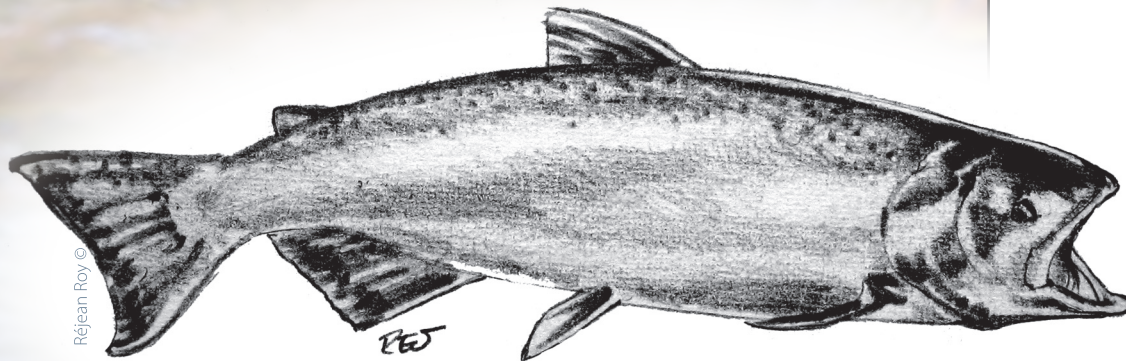
Fish need areas in which they can protect themselves from flying predators.

How?

Once again, the trees and bushes as well as the old stumps along the banks provide shelter and rest areas.

Will I be invaded by wildlife?

Maintaining a natural zone close to your house doesn't necessarily mean that you will be invaded by insects, wasps, mice, or other animals. If these animals find a place to stay along the river (which is probably much more interesting to them than your home), chances are that they will stay in their natural habitat.



Atlantic salmon

there are situations in which you have no choice but to use a breakwall to solve a severe erosion problem, especially if there is impending danger to property or personal safety. It's important that you seek advice with regard to the type of structure to use and hire an experienced contractor. In any case, a proper breakwater is always costly.

If you already have a breakwall or if you plan to build one, plant bushes and shrubs behind it right away. In sufficient amounts, they will make your breakwall more efficient. Plants growing by the wall will help support it on both sides and filter excess water from rain or melting snow. Ultimately, protection of this type will make the wall last longer.

Source of drinking water

There are two sources of drinking water in New Brunswick: wells fed by groundwater and wells fed by surface water from a lake or river. Water can then be supplied to your house through a municipal distribution system or from your domestic well.

In New Brunswick, 21 localities containing 300,000 residents get their drinking water from rivers or lakes. Scientists have identified 20

designated watersheds that help to fill this demand.

Before drinking surface water, we must first treat it, especially if it's intended for the whole population. All municipalities must abide by Canadian guidelines on the quality of drinking water.

(See Section 3 – Watershed Protected Area Designation Order)

Domestic wells

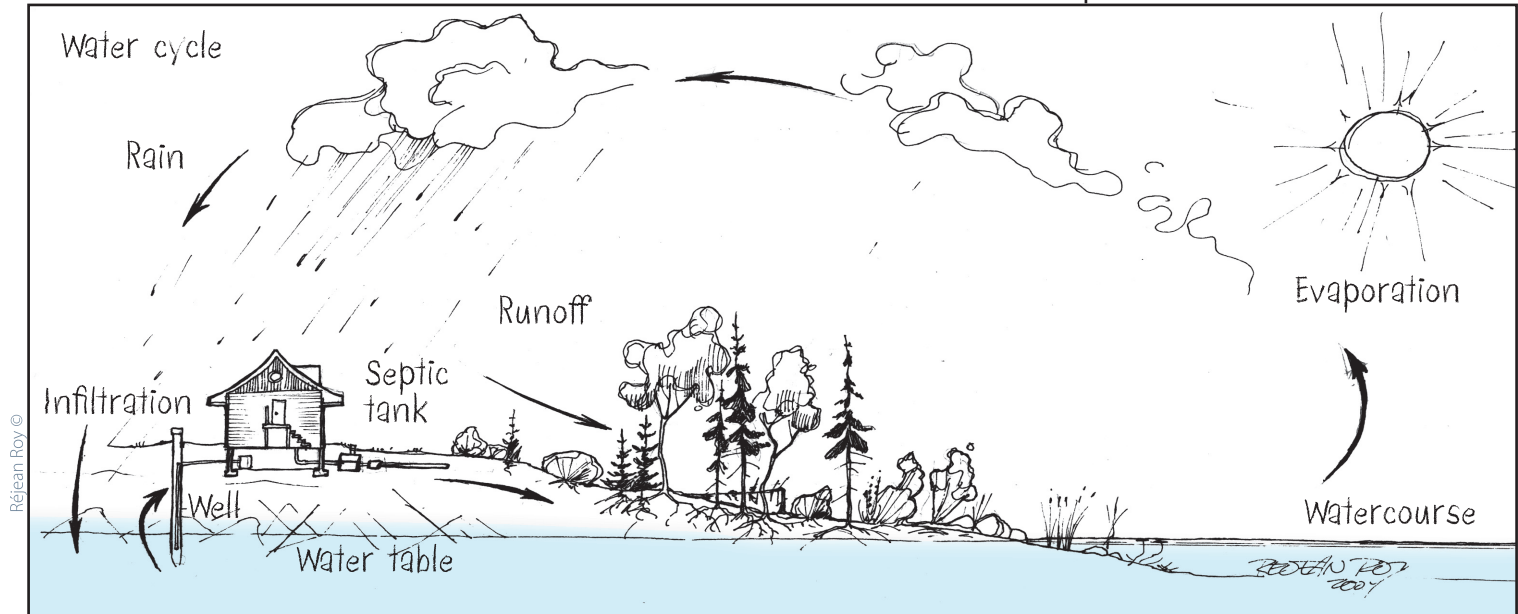
Our source of drinking water

Water, although important for fish habitat, is of greater interest to us when the issue of drinking water comes up. We all are very aware

of our need for water that is clean, potable, and, ideally, piped directly into our homes.

Some homes are connected to a municipal water system, whereas others use a personal well. In more rural areas, houses are supplied by a domestic well. When you have your

own well, it's important to protect both its source and the environment. The wise use of water and the proper maintenance of your well are important not only to protect the buffer zone, but also as a way to avoid unpleasant experiences and reduce your expenses. If you have any questions about



→ Unlike groundwater, surface water such as a river or a lake must be treated before being distributed as drinking water.

→ Runoff water can more easily infiltrate a shallow well than a deep one and contaminate its contents.

drinking water that were not answered by this guide, please contact the Department of Health and Wellness or the Department of Environment (the phone numbers are provided at the end of the guide). Also, if you want to make alterations to your well or have your water analyzed, please call an official from one of these two departments.

☐ Groundwater: Our underground rivers

When it rains, part of the rainwater flows directly toward nearby watercourses, but a lot of it also filters into the ground. The water first penetrates unsaturated areas (areas free of water) whose soil is full of miniscule air pockets, roots,

mushrooms, and insects. The water then reaches a saturated area in which these tiny spaces are already filled with water. The upper part of this area of water-saturated soil is called the seepage line, which rises when additional water penetrates this saturated zone or sinks if water is drained from it. Unconfined groundwater is one of the watercourses in a watershed.

Consequently, domestic wells are supplied by subterranean water reserves that are also referred to as the water table. In general, groundwater is clean enough to drink and doesn't need to be processed. The water table is protected by an overlying layer of soil, which filters out disease-causing

micro organisms. It has been proven that, even if these microorganisms manage to reach the groundwater, they can't survive there for very long. If the water table is contaminated, the reason is almost certainly because it is being continuously fed from a source of contaminated surface water.

☐ Well construction and maintenance

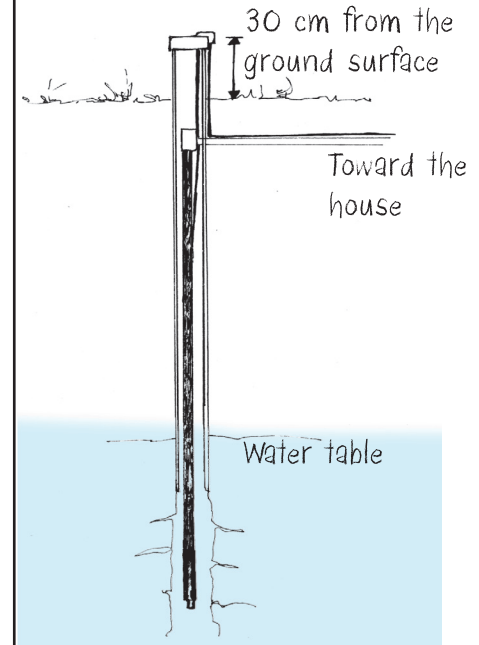
When digging a well, you will eventually tap directly into the water table. To avoid contaminating the groundwater, you must design and maintain a well that prevents surface water from infiltrating and contaminating the water table. That is why newly dug wells must

always be disinfected to eliminate any contamination that may have occurred during drilling. If you are not sure what condition your well is in or if it has been in use for many years, it's a good idea to have an expert check it out.

☐ Is my well in good condition?

You must maintain your well if you want to minimize the possibility of contamination. A properly constructed well does not provide any opening that could allow surface water to filter through.

To avoid contaminating the water table by means of your well:



An abandoned well poses a risk to the groundwater

An abandoned well that has not been properly sealed represents a risk: unfiltered and potentially contaminated water can pass through it to the water table and the groundwater.

The Water Well Regulation of the New Brunswick Clean Water Act stipulates that, if the owner of a well does not intend to use it within six months, he must seal it using a method approved by the Minister. It's also recommended that the well be sealed by a licensed well driller. It goes without saying that waste should never be thrown into a well, even a dry one.

- The well casing must be free of cracks and reach at least 30 cm above the surface of the ground.

- All underground pipes and joints must be well sealed.

- Because there is always a chance that water may drip outside the casing, the ground outside the well must be sloped to allow rainwater or any other surface water to flow away from the casing.

- Avoid using toxic products or other pollutants such as pesticides, chemical fertilizers, gasoline, or oil in the vicinity of the well casing. In addition, don't dispose of these products in your septic tank.

- Naturally, you should inspect your well regularly to make sure that the structure is intact and the casing is in place.

- A well constructed in an area liable to flooding is always at risk of contamination.

☐ Is my water good?

As time goes by, we tend to forget where our water comes from – until we start having problems. You must have your water analyzed as soon as you notice any change in its clarity, colour, smell, or taste. It's also recommended that water samples from private wells be analyzed at least once a year or after any situation in which the well might

have become contaminated. Finally, have the water analyzed if you have any reason at all to doubt its quality.

The best time to analyze well water is when the risk of contamination is at its highest, i.e., early in the spring, after a thaw or a drought, following a heavy rain, or when the well has not been used for a long time. Before taking a sample, we recommend that you contact the Department of Environment or the Department of Health and Wellness to find out the process you should follow and seek advice. They will also provide you with a sample container that you can bring to the office of the Department of Health yourself.

☐ Water analysis

You must have your water tested regularly for bacteria or if you think it might have been contaminated with chemicals. You should automatically have it checked in the following cases:

- You just installed a new well.
- You haven't used your well for a long time. (Before taking a sample, let the water run long enough to clean out the pipes.)
- If there is any change in the colour, taste, or odour.
- If your neighbour has discovered that his or her well is contaminated.



E. coli bacterium

- If the casing head has been flooded (or if surface water has infiltrated your well).
- If major changes have occurred in your neighbourhood, particularly with regard to land use.
- If a family member or guest has been ill with a stomach ache or recurrent diarrhea (permanent occupants can develop a certain tolerance for contamination).

☐ What do we mean by contamination?

Water is a vector for the numerous substances and organisms that pass through it. We call this contamination

when these organisms pose a threat to our health. To comply with Canadian standards for potable water, the responsible agencies must test no less than 80 different parameters. But when you analyze your well water, you can't check all those parameters because it would be too expensive. The recommended approach is to test for the main contaminants responsible for severe illnesses or long-term health effects.

Depending on where you live, the contaminants being checked are the ones most likely to be present because of the way the surrounding land is used or the history of the area. The Department maintains a database of the results of all well water analyses. If you are concerned

about a particular contamination issue, contact the Department of Environment or the Department of Health and Wellness.

□ Types of contaminants

There are two categories of contaminants: biological and chemical. Biological contaminants contain microorganisms such as bacteria (including coliforms), viruses, and other parasites. Chemicals products include dangerous products such as pesticides, heavy metals (lead, mercury, etc.), and more benign contaminants such as minerals.

Biological contaminants

Biological contamination is caused

by tiny organisms. There are countless species of bacteria and viruses. Although some are not harmful, others can cause disease.

To determine if your water is safe to drink, the laboratory will first test it to

Regarding coliforms

Total coliforms are normally found near the surface of the soil in which they grow and multiply, in soil or decomposing vegetation, and in the digestive tracts of humans and animals. We know that they do not survive long in the water table. The presence of total coliforms in well water is the result of the infiltration of surface water.

The presence of fecal coliforms is a sign of more severe contamination. These coliforms are a sub-group of coliforms, among them the notorious

***E. coli*, which proliferates in the intestines of animals. Fecal coliforms can cause diarrhea and nausea.**

Their presence (confirmed by *E. coli*) indicates that the water source was recently contaminated by fecal material. Furthermore, their presence might also be a sign that other types of disease pathogens, such as viruses, are present in the water. Water that has been contaminated with *E. coli* is unsafe to drink, and corrective measures must be taken immediately to fix the problem.

check if total coliform and *Escherichia coli* (*E. coli*) bacteria are present, because these are relatively easy to detect. If coliforms are present, there is a risk that the sample might also contain more dangerous bacteria. The presence of total coliforms and *E. coli* is therefore a red flag.

Chemical contaminants

Unlike viruses and bacteria, which can't survive very long in the water table, chemical contaminants are harder to eliminate because they tend to linger in the environment. Furthermore, boiling water or disinfecting it with chlorine will not get rid of chemicals. When there is chemical contamination, it is often necessary to find another source of water or install a water treatment system.

These types of contamination are often of natural origin, or they result from major changes in the environment, such as a discharge of industrial effluent. Nitrates and nitrites originate from the excessive use of fertilizers that are potentially harmful to our health. We must be very careful around our property and in our watershed to avoid contaminating our sources of drinking water. Furthermore, pesticides, solvents, arsenic, and heavy metals such as lead and mercury can contaminate our drinking water and pose a danger.

Other unsightly mineral contaminants

Some mineral substances are naturally found in well water because of the geology of the area. Iron, sulphur, and calcium are present in the water in amounts that depend on the composition of the rock around the well. Even if these minerals are not in themselves dangerous to human health, they can – in large quantities – change the water's hardness, smell, and colour. There is no way to "eliminate" them from a well. The only option, other than digging another well, would be to install a treatment system that would solve the problem.

☐ What to expect from test results

Most of the known causes of contamination in the region are bacteriological in nature. Unless otherwise specified or if there are suspected cases involving other

How to find the source of contamination

Here are some of the different ways contaminants can invade your source of drinking water:

Through sampling, when you fill up the bottle for analysis:

The following precautions must be strictly followed:

- Wash your hands.
- Avoid touching the inside of the container or the cover. Be careful where you put the cover.
- Clean the tip of the faucet with a

cloth and a solution of Javelle water.

- Let the cold water run for at least a minute before filling up the bottle.

Through your well:

- If the pipes are perforated or the connections between them are not properly sealed.
- If the cover of the well is not installed properly.
- If surface water penetrates the top of the casing.

Through the groundwater itself:

A local source of contamination can infiltrate the entire water table.

Cracks in the rocks

The rocks in the soil often contain cracks that allow bacteria and viruses to propagate more rapidly and then contaminate the groundwater.

For example, wastewater from a poorly maintained septic tank can reach the water table more easily in such situations.

It's important to be aware of potential problems close to your property or on an adjacent lot, and to keep all structures working properly.

contaminants, analyses will be carried to confirm the presence or absence of coliforms.

If the analysis of the well water reveals coliforms, you must stop using it and proceed with a second analysis to confirm that the well has been contaminated. Meanwhile, contact the Department of Public Security to find out the process to follow for boiling water. If the second analysis reveals that the contaminants are still present, you must identify and eliminate the source of the contamination, or install a permanent water treatment system.

☐ **How to disinfect your well**

If you suspect that your well water has been contaminated with bacteria, contact the Department of Health; they will tell you the best way to disinfect your well and advise you how to deal with whatever type of contamination the test results reveal.

Javelle water is normally used to neutralize bacteria. Don't forget to set aside a reserve of water that you will boil before you start to neutralize the bacteria. Keep this water in the fridge.

To disinfect your well:

- Pour Javelle water (5% chlorine) into your well.

- Start up the pump and open all the faucets.
- Close all the faucets when you start to smell chlorine.
- Leave the Javelle water solution in the system for 24 hours.
- Open the faucets and let the water run until the chlorine smell disappears.
- Get your water tested again, and disinfect again if necessary.

■ Septic tanks

□ Stand-alone wastewater disposal and treatment system

If your system is not connected to the municipal network, you must have a stand-alone sewage disposal and treatment system. Your septic tank and disposal field are essential for collecting and treating wastewater before it's evacuated into the environment.

Sometimes these stand-alone systems malfunction because of negligence or incorrect use, which explains why septic tanks are considered the main producer of wastewater in the soil and the main contributor to the contamination of the water table.



Réjean Roy ©

The construction of a septic tank is subject to strict regulations governing its design and installation.

Department of Health and Wellness

Any installation or modification of a septic tank must be approved by a representative of the Department of Health and Wellness, who will inspect the tank before it is buried and put into use.

For the installation, hire a certified contractor who is familiar with the guidelines related to the design of septic systems as stipulated in the Health Act.

This sign is there to protect us: "The mollusks are considered unfit for consumption."

What happens when septic tanks malfunction? The result is a general degradation of the quality of the environment, which is even more noticeable when they are close to a watercourse. A poorly managed farm may help contaminate a river, but you need only a few malfunctioning



Rejean Roy ©

septic tanks to prevent people from swimming in a watercourse or even at the beach.

Bacterial contamination also impacts the local economy. If you have to close a beach because of a high level of coliforms in the water, it automatically affects tourism and the shellfish harvest. The steamer clam harvest is closed more often because of bacterial contamination than because of overfishing. An inn whose beach must be closed will lose its clientele. Inevitably, the value of the properties in the area will plummet.

The size of the septic tank is determined by the number of occupants in the house. Also, a public building or a company must

own a stand-alone water treatment system of a suitable size. If you have a small business, make sure that your system is efficient and that it doesn't pollute the surrounding water.

Advantages of a properly functioning septic system:

- It will prevent the contamination of the source of your drinking water and the onset of diseases.
- It will protect the quality of the water in rivers, lakes, and estuaries and at the beach.
- It will protect shellfish harvest sites.

How your septic tank works

1 – Wastewater goes through the pipes (a) and enters the septic tank (b).

2 – The wastewater remains in the septic tank for a certain amount of time, which allows solids called sludge (c) to settle to the bottom. Lighter materials form foam (d), which floats to the surface.

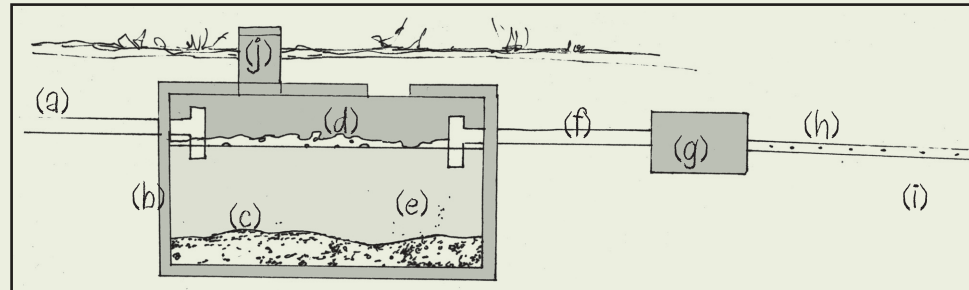
3 – Beneficial bacteria, which are naturally present in wastewater, break down the organic matter (sludge and foam). A layer of liquid (effluent) forms between the foam and the sludge (e).

4 – The effluent flows out the outlet

pipe (f) when there is another influx of wastewater, and passes through the distribution box (g), where it is sent in different directions by the perforated pipes in the disposal field (h). The disposal field can take different forms because there are several models or installation types adapted to different kinds of lots.

5 – The effluent filters through the pipes into the gravel bed (i) and the surrounding soil, where dangerous bacteria and viruses are retained and broken down by "beneficial" bacteria.

6 – Access for inspecting and pumping out the tank (j).



Watch out for indigestion!

Some products (or objects), even benign ones, can give your tank serious indigestion. The following hinder the efficient treatment of wastewater:

- drain cleaners
- hair
- dental floss
- latex paints
- oil paints
- solvents
- gasoline
- mechanical lubricating oil
- cooking oil
- disinfectants
- Javelle water
- paper towels
- coffee beans
- filters
- papers
- diapers
- condoms
- cigarettes

In this section, we will review how a septic tank works, with an emphasis on how it can be maintained to ensure its effectiveness and durability after installation.

☐ How your septic system works

A septic tank that functions properly uses natural processes to treat bacteria, viruses, and other biological contaminants. For the system to work well, it must have two components: a septic tank and a disposal field.

Septic tanks are constructed of either concrete, fibreglass, or plastic. At the time of installation, it's recommended to let the pump aperture pipe extend above the

ground; that way, you will be reminded to pump out the tank from time to time and you won't have to dig for the pipe every time you do it.

A disposal field consists of a network of perforated pipes installed on a bed of rock chips. Sometimes gravel is added if the ground underneath is not sufficiently permeable (e.g., clay soil). Other soils have natural permeability.

If your system dates back more than 25 years, it's possible that it was made of metal and is so rusty that it's no longer functional. Also, the tank might have collapsed, and the effluents might be leaking directly into the ground. If that has happened, there will be a depression

in the ground where the tank is situated.

Cottage septic tanks are often inefficient because they were not built for intensive use. In some cases, the tank is too small or there is no disposal field. Some old cottages have only a holding tank, which doesn't process wastewater and must frequently be pumped out. If you want to transform your cottage into a year-round home, you must first verify the condition of the tank. The whole neighbourhood will be grateful. After all, a septic system gives you peace of mind!

☐ How to ensure that your septic tank works properly

Generally, a septic tank that is well designed and maintained doesn't cause problems.

However, here are some tips that will prevent your tank from becoming a source of coliforms:

- *Reduce your water usage:*

If too much water enters the septic tank on a regular basis, the sludge cannot settle properly, which gives bacteria a chance to develop. Sludge can also be carried to the distribution box, where it might block the ducts. You can help your septic tank work properly by limiting the amount of water it has to process.

If you plan to install a new septic tank

Get information on new technologies from the contractor who will install your septic tank. Newer models are always more efficient and reduce the effects on the environment.

→ A septic tank must be pumped out every two to three years.

Signs that the system is not functioning properly

- Swaths of grass that are growing particularly well above the disposal field;
- The appearance of wastewater in depressions in the soil, e.g., a ditch or a swampy area;
- Toilet bowls, sinks, and drains that empty more slowly, or backflow in the drains;
- Sewage odours in the vicinity of the disposal field or the house.

- *Pump out your septic tank regularly.*

To ensure that it works properly, you must pump out your septic tank every two to three years. The frequency will vary depending on the number of people living in the house, the number of visitors, and the size of the tank. To avoid unpleasant surprises, inspect the tank when you pump it out, especially if it's an old one.

- *Don't dispose of chemicals (or any other product) in your tank.* A septic system can process human waste really well, but other products might cause indigestion (see opposite page).

- *Reduce your use of disinfectants.* Unfortunately, some of these products, such as Pinesol or Lysol, kill the beneficial bacteria in your septic

tank. Also limit your use of Javelle water and soap.

- *Avoid commercial additives or starters.* These products normally accelerate decomposition, but they are not necessary and they do not eliminate the need to regularly pump out your tank.

- *You must absolutely avoid flushing cleaning products down the toilet or pouring them down the drain.* These products can kill beneficial bacteria. Avoid pouring strong cleaning products down the sink or the drain.

- *You must absolutely avoid using cleaning products for the toilet or the drain.* Instead, use warm water or plumbing tools.

- *You must absolutely avoid disposing*

of chemicals in the tank. The system can't break down and treat paint, solvents, kerosene, gasoline, or motor oils.

Don't forget that these products end up in the soil on your property, and they could pollute your drinking water.

☐ How to protect your disposal field

- *Avoid operating vehicles or other machinery over your disposal field.* All-terrain vehicles or farm animals moving over your disposal field compact the ground, which reduces its ability to treat wastewater. The snow on top of the disposal field acts as an insulator, so you shouldn't compact or remove it.

- *Avoid planting trees over your disposal field.* The roots could get tangled up with the pipes.

- *Make sure that any surface water (flood water) and the water from gutters flows away from your disposal field.*

☐ Municipal wastewater treatment

The fact that you're connected to a municipal wastewater disposal system doesn't mean that you can do as you wish. Wastewater treatment centres can't process dangerous chemicals any more than a septic tank can; also, not all municipalities are equipped with a treatment system.

→ The public demand for water has a major impact on drinking water.

→ Stewardship of our watercourses involves both conservation and protection. To ensure proper stewardship:

- Avoid wasting water,
- Reduce the amount of products added to water.

→ One easy way to conserve water: Place a water-filled bottle in the toilet tank.

■ Water conservation and protection

□ How we affect water

As part of its cycle, water passes through our houses so that we can use it. Clean water enters the house and is then discharged into the environment. What we do to this water is bound to have repercussions on our surroundings.

When we talk about the environment, we often hear people say that we are all in the same boat. This saying is a daily reality when you live near a watercourse. These precious shoreline areas are very

sensitive to disturbance. We could even say that they are “high-risk” areas. For example, spills of toxic home products that contain oil or gasoline can put these harmful chemicals directly into a watercourse. As a result, our actions have potential repercussions on the lives of our neighbours, and vice versa.

□ How to reduce water consumption

In our region, it’s often difficult to understand why we should reduce our water consumption. However, even if all we did was properly manage our septic systems, we would be better off. Adding too much water makes it harder for the system to treat wastewater

properly, which could lead to the contamination of a watercourse or a well – either yours or your neighbour's.

In more densely populated areas, excessive use of groundwater can cause a considerable drop in the level of the water table, especially during periods of drought. When that happens, there's a risk that saltwater may invade wells located too close to the ocean.

However, reducing consumption doesn't mean that we have to deprive ourselves of water. There are a number of small things we can do around the house to reduce domestic consumption. You just need to be aware of what you're

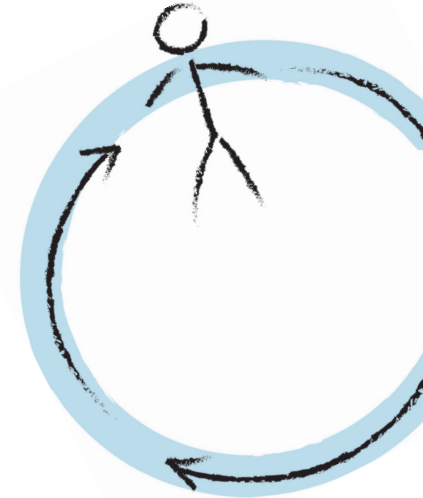
doing and, when necessary, replace or fix old, malfunctioning equipment.

In the washroom

Sometimes, the valve inside the tank of an old toilet bowl is not very watertight, which can lead to a considerable water loss. To check for water loss, put one or two drops of food colouring in the water in the tank. If you can see the dye in the toilet bowl a few minutes later, it's time to change the valve.

A toilet that is more than 10 years old uses a lot of water every time you flush. If you decide to change it, buy a more recent model that is more efficient and uses less water. The replacement or maintenance of a toilet is probably one of the most

→ The human body is made up of approximately 70% water.



When we understand our place in the water cycle, we become more aware of our actions.

important ways to reduce water consumption in the washroom.

Faucets

Replace or repair leaky faucets. Sometimes all you need to do is replace the rubber rings. You should also replace the showerhead with a low-flow model that reduces water consumption. Because we take hot showers, that would also reduce the costs associated with hot water. In most households, the hot water tank is the electrical appliance that uses the most electricity.

Washing machine and dishwasher

To reduce the amount of water flowing into the septic tank at any given time, use the washing machine

and the dishwasher on different days, and only when they are full. That way you will not overload the tank.

☐ **Reduce the concentration of chemicals**

It's not unusual to have powerful cleaners and other toxic cleaning products around the house. It can be hazardous to your health to use these products too frequently. In fact, we are probably exposed to more toxic pollutants inside our homes, at the office, and even in our cars than anywhere else! For that reason, perhaps we should take another look at just how clean our homes have to be, especially when most of these products end up down the drain. Without giving up the use of

→ The ultimate destination of the chemicals that you flush down the toilet or pour down the drain is the soil of your own property!

these products completely, we need to think about where they end up after we're finished with them. Being aware of this will help us assess the consequences of our actions.

☐ Sources of phosphor and nitrogen

In addition to bacteria and viruses, two other components of wastewater can have negative impacts on the environment: phosphor and nitrogen. Phosphor is found mainly in detergents, and nitrogen in fertilizers. Waterfront property owners in particular should worry about phosphor and nitrogen because they are responsible for the excessive growth of algae and other aquatic plants that consume the

All purpose cleaner	Baking soda or borax mixed with warm water. To remove grease, add a touch of lemon juice.
Washroom cleaner	Wash regularly with soap and warm water. For the tiles and the tub, apply baking soda and brush. For the spaces between the tiles, try vinegar.
Disinfectant	Use a mixture of borax and warm water.
Windows and mirrors	Vinegar with a touch of lemon juice and warm water; this mixture can be stored in a bottle.
Oven cleaner	Brush with baking soda and steel wool or a mixture of pure soap and lemon juice or borax and warm water. For persistent grease, make a paste of baking soda, salt, and water.
Abrasive cleaner	Use baking soda or a mixture of baking soda and soap (phosphate-free).
Bleaching agent	Use borax or a hydrogen peroxide bleaching agent.

*source : Georgia Strait Alliance
(www.georgiastrait.org)

Your lawn

The lawn is the perfect place to enjoy a summer day, but how you maintain it could cause damage to the environment.

Here are a few tips that will help you keep your lawn in good shape while protecting local watercourses:

- ***Set your lawnmower's blades high, cut the grass more often, and leave the grass clippings on the lawn.***

Clippings help to nourish the grass and retain moisture. If the mower works properly and you cut the lawn during dry weather, there might not be as many chunks of grass.

- ***Reduce your use of fertilizers.***

Fertilize moderately in September or in May, and opt for an organic natural fertilizer or a slow-release fertilizer.

- ***Water profusely to saturate the soil, but not often enough to encourage the growth of deep roots.*** Grass grows

well when the whole root area is drenched and then dries out a bit before the next watering.

- ***Reduce or avoid the use of pesticides.***

These products can damage the soil and be harmful to the overall health of the grass, and, of course, they can also pollute watercourses.



Réjean Roy ©

water-borne oxygen needed by fish. Also, swimmers tend to be put off by an excessive amount of aquatic plants in a watercourse.

A properly functioning septic tank can treat these products, but not if the system is overloaded. If you maintain a buffer zone between your septic system and the watercourse, the vegetation will be able to absorb some of the excess.

☐ Alternate solutions

We do have a few options when it comes to reducing the concentration of chemicals. For example, there are biodegradable cleaners and phosphate-free products on the market. Other alternatives, which are

often found around our kitchens, are multi-purpose and less expensive. Although they might require a bit more work, they greatly reduce our exposure to dangerous chemicals.

☐ General tips for outside the home

In the garden

Why not collect rainwater to water your vegetable or flower garden? Place barrels under the gutter downspouts, and use these rainwater reserves as needed.

Car wash

Avoid washing your car close to a watercourse (or even in it!). Oil, soap, and other kinds of dirt might end up in the water.

On the ice

During winter, use sand rather than salt on the icy stairs and sidewalks around your house.

Fuel tanks

Handle gasoline and similar products away from the watercourse and on solid surfaces so that you can clean them up if they spill. Also, be careful when you change the oil in your car. If you build a garage or a shed, make sure that it is located at a good distance from the edge of the water.

Wood preservative

Instead of using wood preservatives, choose wood that is more resistant to rot. All you need to protect this type of wood is a water-based dye or an application of linseed oil. Avoid the use of wood that has been commercially treated with creosote.

Nitrates and your septic tank

Nitrates come from fertilizers, but also from decomposing organic wastes such as those produced by a malfunctioning septic tank.

In large amounts, nitrates can cause watercourse eutrophication, i.e., excessive plant growth. If grass thrives on your disposal field, it could be that your system is not functioning properly.

→ To obtain more information on pesticides, visit the following Web site:
www.parentsagainstpesticides.ca

New Brunswick lakes

The lakes in our province are a really great place to be. Some people go there to fish or canoe; others just like to look at them while they relax and admire the scenery.

Unfortunately, it's not unusual to find something resembling a dump close to the anchorages in certain lakes, with lots of discarded and broken bottles. These not only make the site less attractive, but they also increase the risk that swimmers will injure themselves.



Réjean Roy ©

Paint

If you use acrylic paint, you won't need a thinner.

Pesticides

Pesticides are chemical substances used to destroy insects and weeds. Increasingly, research is showing that they are harmful to our health. Obviously, children are especially susceptible because they are small. Pesticides can end up in the water quite quickly if you live near a lake, the sea, or a river. The cumulative effect in the neighbourhood can be considerable. Ideally, you should opt for alternate solutions or at least limit your use of pesticides.

Soap

Both detergents and fertilizers contain phosphates. An excess

of phosphates in a watercourse accelerates the growth of algae and results in a phenomenon called eutrophication. This process occurs when algae grow at such an excessive rate that they start to decompose. Their decomposition absorbs the dissolved oxygen in the water, making it unavailable to aquatic fauna. Try to limit your use of fertilizers and perhaps explore the idea of compost. Note: There are phosphate-free soaps on the market.

In short, use common sense when it comes to chemicals. For example, before buying a toxic product that is dangerous or known to have environmental side effects, make sure you really need it. Are there no other alternatives or ways to get the same results? There is no safe way to dispose of most toxic products.

Nobody in the province offers a collection service for hazardous waste. Throwing these products in the garbage or down the drain is not really a solution; it would be better to avoid buying them or to limit the amount that you purchase.

□ Large objects

Water carries more than just microscopic organisms, sediment, and chemicals. A considerable amount of waste can be found on the seashore, washed down the rivers when the water level rises in the spring. Some types of waste are harmful to animals and humans. Just like defective septic tanks, waste scattered across the landscape can damage the environment.

To avoid this visual pollution and the danger caused by waste, take advantage of the semi-annual service for the collection of large objects. If you miss it, you can bring large domestic items (except hazardous and toxic products) to waste landfill centres at any time of the year for a minimal cost.

□ Vacant lots

If you're the owner of a vacant lot (open or abandoned) that you don't often go to, set up a gate at the entrance so that nobody can use it as a dump. Don't forget that owners are responsible for unrestricted dumps on their property and for any other type of resulting pollution.

Réjean Roy ©



Unrestricted dump on the edge of a property.

Checklist

Buffer zone:

- ☐ Leave a few meters of uncut grass along the edge of the river.
- ☐ Don't remove natural debris from the river.
- ☐ Plant native shrubs and trees by the watercourse.
- ☐ Construct trails and/or stairs that have a low impact on the environment.
- ☐ Use pruning techniques to get a better view of the watercourse.

Well:

- ☐ Check the condition of the well.
- ☐ Have the well water analyzed.

Septic tank:

- ☐ Pump out your septic tank on a regular basis.
- ☐ Protect the disposal field.

Water conservation:

- ☐ Make sure that the faucets and toilet are working properly.
- ☐ Use alternative cleaning products.
- ☐ Limit your use of fertilizers and pesticides.
- ☐ Dispose of large objects appropriately.

Beach Sweeps

A total of 40 groups took part in the Beach Sweeps 2004 campaign. From Dalhousie to Grande-Digue, 997 participants collected 285 bags of debris from more than 90 km of beaches, for a total of 2225 kg of garbage!

Specific objects found during these Beach Sweeps:

Sandals, toys, chip bags, shotgun shells, lobster and crab traps, ties,

ropes, oil containers, cigarette butts, disposable lighters, paint brushes, self-adhesive floor tiles, car parts, nails, chairs, tampon applicators, condoms, diapers, needles, broken glass, polystyrene foam, plastics, coffee cups, etc.

Source: Beach Sweeps 2004/
Partnership for the integrated
Management of the Bay of Caraquet
watershed

Petit-Rocher Cubs



SECTION 3



→ It makes a lot more sense economically to protect a watershed rather than clean it up and restore it after it has been polluted.



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Laws, policies, and resources

□ Laws and the environment

We're lucky in New Brunswick to have relatively healthy rivers that generally meet both our needs and those of wildlife.

The only goal of New Brunswick's laws and policies is to maintain and improve this provincial treasure. These guidelines allow us to protect our watercourses against certain practices that could be harmful to water quality and wildlife habitat in general.

This section is intended to help us learn how to use these laws and policies as development tools to prevent potential damage from erosion, floods, and storms.

Laws and regulations are not always complied with or understood. Laws alone can't ensure a healthy environment and rivers forever filled with good drinking water. We must all weigh our daily actions and decisions. At some point, we must stop and take a good look at the impact of every decision we make. It's the combination of all these decisions that determines the state of our environment. If every action counts, then it's up to each of us to set an example of good

environmental stewardship. We all have to assume our responsibilities within the community.

Laws meant to protect our watercourses

The table on the next page summarizes the provincial laws that may apply to you if you live on, own, or service a lot close to a watercourse. Some regulations deal mostly with the use of water, such as those governing well water and wastewater, and they apply to all of us. Further on, we'll examine some federal laws aimed at protecting fish and their habitat.

The following paragraphs offer a summary of these laws and some of the resulting policies. At the end of this section, there is a list of the names and numbers of contacts and reference documents.

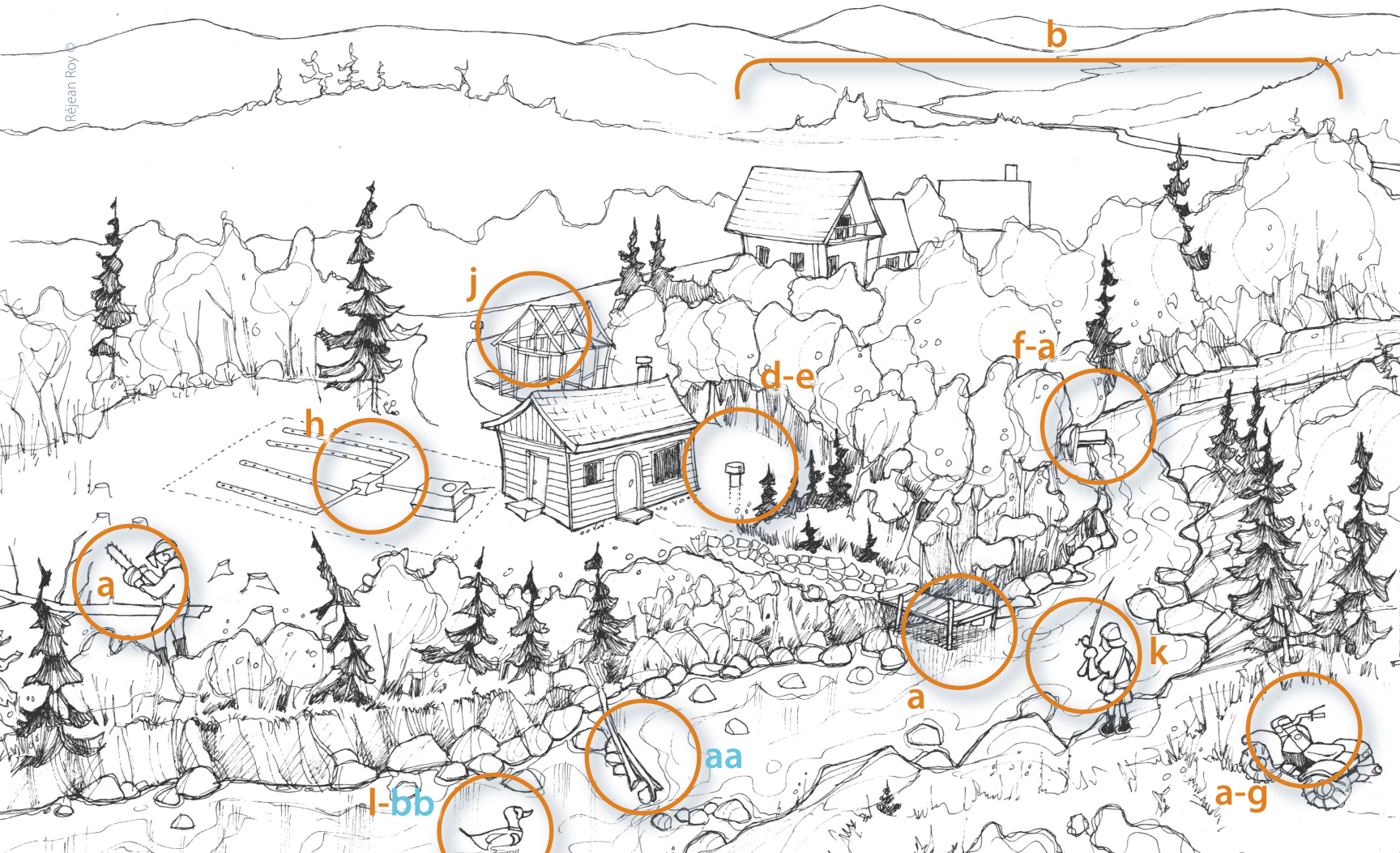
District Planning Commission

For any type of construction or development, including landscape design, that will take place in a municipality or local service district, you must obtain a permit from the District Planning Commission. Before issuing a construction permit, the Commission will make sure that you have all the permits required by other provincial, federal, and municipal authorities, depending

District Planning Commission

The many different laws can be a real headache to anyone who wants to develop or build, especially if the lot is situated close to a river, a wetland, or the ocean. The District Planning Commission is a good place to go for information before starting any construction or development work.

→ Watercourses also include wetlands, such as freshwater and salt marshes, as well as peat bogs.





Laws and regulations intended to protect our watercourses

Provincial laws and regulations (see details on the following pages)

a – *Watercourse and Wetland Alteration Regulation*

b – *Watershed Protected Area Designation Order*

c – *Water Classification Regulation*

d – *Potable Water Regulation*

e – *Water Well Regulation*

f – *Water Quality Regulation*

g – *Used Oil Regulation*

h – *Health Act*

i – *Unsightly Premises Act*

j – *Community Planning Act*

k – *Fish and Wildlife Act*

l – *Endangered Species Act*

Federale laws (see page 84)

aa – *Fisheries Act*

bb – *Species at Risk Act*

→ To find out more about our provincial laws and regulations, visit www.gnb.ca/justice/index.htm.

Provincial law	Responsible department	Regulations under the Act	Why this regulation is being applied
Clean Water Act	Environment/ Health and Wellness	a <i>Watercourse and Wetland Alteration Regulation</i>	• The aim of this regulation is to protect the shoreline and the bed of the watercourse from all harmful activities. • A watercourse includes almost all related bodies of water such as lakes, ponds, brooks, and spring brooks. • Disturbing the soil or cutting the trees within 30 m of a watercourse is a priori forbidden and requires a permit. • A permit is also required to extract gravel from a streambed or shore, build a bridge or culvert, or drive any vehicle or other type of machinery in a watercourse.
		b <i>Watershed Protected Area Designation Order</i>	• This order is intended to protect any watershed (or drainage basin) designated to supply drinking water to a village or town. • In the Chaleur area, the Nigadoo River and all its tributaries are protected against any source of pollution. • The order stipulates certain restrictions on activities inside a setback zone of 75 m and within the boundaries of the watershed.
		c <i>Water Classification Regulation</i>	• This water classification regulation sets standards for water quality and promotes good water stewardship within a watershed (see Section 1).
		d <i>Potable Water Regulation</i>	• The purpose of this regulation is to ensure that water intended for drinking meets the standards established by the NBDE and DHW. • It also outlines the steps that well contractors must follow to ensure that the water from a recently drilled well is analyzed and declared potable. • It also stipulates that the public water reserve must be analyzed regularly according to the plan provided by the DHW.
		e <i>Water Well Regulation</i>	• The purpose of this regulation is to protect the water quality of streams by forbidding, among other things, the discharge of pollutants into the water or in an area that could drain into the water and alter its quality.

Clean Environment Act	Environment	f <i>Water Quality Regulation</i>	• The purpose of this regulation is to protect the water quality of streams by forbidding, among other things, the discharge of pollutants into the water or in an area that could drain into the water and alter its quality.
		g <i>Used Oil Regulation</i>	• This regulation requires companies that sell oil, such as garages, to collect used oil.
h Health Act	Health and Wellness		• This law provides for the control of various facilities or activities that could be harmful to people's health. • It stipulates, among other things, that anyone wishing to build a stand-alone wastewater disposal and treatment system (a septic system) must first obtain a permit from the Department as per the regulations.
i Unsightly Premises Act	Environment		• This law make it illegal to accumulate scrap or other unsightly waste on private property or allow a building to become a risk to public safety.
j Community Planning Act	Environment		• This law states that a permit must be obtained for any construction or development work.
k Fish and Wildlife Act	Natural Resources		• The purpose of this law is to preserve species of fish and animals, and their habitat, and regulate hunting and fishing.
l Endangered Species Act	Natural Resources		• This law oversees the protection of New Brunswick's 16 endangered species.

Are you a committed steward?

If you see someone whose actions violate the laws and regulations intended to protect our rivers, please make him aware of it; you might prevent him from getting in trouble.

Also, if you are aware of an unacceptable or questionable situation, contact the Department. These rivers belong to all of us.

on the location of the construction or the type of development. The Commission will inform you of the specific laws that apply to your lot. For example, some municipal by laws specify a maximum allowable surface for tree cutting within town limits in addition to the restrictions imposed by the Department of Environment.

☐ Watercourse Alteration Permit: General protection for our streams

In general, for an intervention of any size whatsoever near a watercourse, you must first contact the NBDE. Never assume that you don't need a permit, because that's not an acceptable excuse. You might believe that you don't need a permit, but that doesn't mean that you should forge ahead with your plans. If you do start work near a watercourse without a permit, it might delay your project, and you could also be subject to penalties.

Activities that might violate the regulation on watercourse alteration:

- A vehicle driving in a watercourse.
- Substances added to a watercourse.
- Oil or gasoline leaking from equipment.
- Excavation or dumping within 30 m of a watercourse.
- Erosion control installations that are not maintained.
- The removal of the trees or vegetation close to a watercourse.
- Sediment leaking into the water.
- Poorly stabilized banks.

In most cases, issuing a permit allows the Department to review your plans and even to suggest improvements that would prevent needless damage to the watercourse and to your property. Always allow for the time necessary to obtain a permit when

planning your work.

You can obtain an application for a permit to modify a watercourse on the Internet or directly from the NBDE office. You can also have access to documents related to the construction of safe bridges, roads, and other structures.

It's illegal to start modifying a watercourse or a wetland (e.g., a marsh), or even move the soil within 30 m of a stream or a wetland, without first obtaining a permit from the NBDE.

Alterations that require a permit include removing individual trees, the soil horizon, rocks, etc., as well as adding new materials such as sand,

Interim permit: shorter waiting time for minor work

If you want to start minor work close to a river without modifying or altering it, you might be able to get an interim permit rather than a Watercourse Alteration Permit, which has to come from Fredericton and takes at least two months to obtain.

Interim permits are available from the regional offices and are usually issued within 10 days of the initial request. Depending on the work to be done, an interim permit may be for one of

the following activities:

- cutting of non-commercial woody vegetation,
- selective cutting,
- construction of a dry masonry wall or a riprap wall,
- removal of obstacles and artificial modifications,
- construction of breakwalls, and
- others.

Contact the NBDE regional office to find out which type of permit you need and how to apply for it.

soil, etc. In addition, before trying to stabilize a bank, you must also obtain a Watercourse Alteration Permit.



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☐ Watershed Protected Area Designation Order

This order provides considerable protection for sources of drinking water. Its aim is to manage and control the use of the lands and the water inside a watershed to protect the public reserve of drinking water. Because a contaminated watershed means that a whole community will be deprived of its drinking water, it's essential not to do anything that could cause that to happen. As mentioned in previous sections, sedimentation as well as effluent runoff from a septic tank can harm the quality of our water.

Among other things, the order specifies that watercourses, lakes,

ponds, etc., must be protected by maintaining a 75-m buffer zone (or setback zone) along the bank. Small brooks are included, and even most of the streams that are only visible in the spring. For more details, contact the NBDE to consult the map of watercourses referred to in the order.

Even though a buffer zone has protective effects, the territory immediately adjacent to it can still have a negative impact on water quality, depending on circumstances. For that reason, there are also restrictions on the types of activities allowed in a watershed. If you live in the Nigadoo River watershed (above the municipal water intake) or if you own property in this area, this order probably affects you. The activities

targeted by the order range from residential development and logging to commercial development.

For more information, see *A guide to New Brunswick's Watershed Protected Area Designation Order*. This very simple guide will let you know what activities are allowed inside watersheds and the 75 m buffer zone.

☐ Significant marshes

The province has developed a program that calls for the reclamation of significant marshes across New Brunswick. The salt marsh of Beresford, which extends over 8 km and is fed from four watercourses, has been designated as a significant

marsh in New Brunswick.

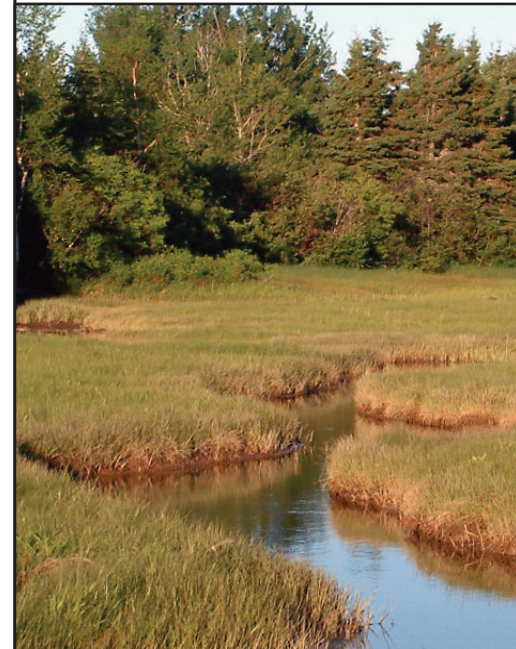
Over the last decades, we have lost a large number of marshes because of development and, above all, backfilling. Today we are more aware of the importance of these wetlands and their ecological functions. They provide a rich environment and act as a nursery for many species. Identifying significant marshes allows us to factor in their value when we plan the development of the surrounding lands.

☐ Policy for coastal areas

As mentioned at the beginning, our lives have always been influenced by water. Statistics show that 60% of our population lives less than 50 km

Where do marshes begin and end?

It's hard to determine the precise boundaries of a wetland such as a marsh. If you have any doubts, ask the agent to determine the boundaries when you apply for a permit.



→ The policy governing coastal areas is intended to balance development requirements with the need to protect our shores.

from the coast. Those areas support a major part of our economic activities and leisure. In fact, about 70% of the tourists who come to New Brunswick do so because they want to pursue activities related to the seacoast.

However, the pressure to develop

these coastal areas continues to mount. Recent studies of coastal habitats testify to the stress imposed on the environment by extended economic activities and the construction of residences close to the shore.

These adverse effects not only make themselves felt in the natural surroundings but also have an impact on our buildings and development projects. The sea level has risen slightly over the last few decades, and there are indications that this will continue. Storms, combined with high winds and major tides, pose increasing risks to humans and infrastructures. The cost of the resulting economic losses must often be borne by the public purse.

Rise in sea level

Because of rising sea levels, coastal storms, flooding, and shore erosion are problems that have a direct impact on people who live by the sea. Some parts of the Gulf of St. Lawrence are among the most vulnerable areas in Canada.

The effects, which are already visible, may get worse in the coming years. Some possible effects include:

- Higher and increased flooding;
- Migration of beaches inland;
- Penetration of saltwater into the freshwater aquifer along the shore;
- Dune erosion, and cliff destabilization and erosion;
- Damage to infrastructures (e.g., bridges, piers, or roads); and
- Impacts on the economy of coastal communities.

Information source: Environment Canada

The goal of the policy for protecting coastal areas is to manage the development of our coasts in ways that ensure viable economic growth while also respecting nature.

☐ Who owns the beach?

In general, the “dry” part of the beach belongs to the owner of the waterfront property, whereas the “wet” part or the area exposed to the tides belongs to the province and is administered by the DNR. The boundary between the two is determined by the average high tide mark.

The province also owns the underwater or submerged areas up to a certain distance from the shore.

Some of the responsibilities for this area come under the jurisdiction of the DNR, and others are delegated to provincial and federal authorities.

Structures intended to protect a property from erosion must be built

What is this policy all about?

The policy covers three sectors: A, B, and C. Sector A includes the beach, the dunes, the rock platform, and the tidal marshes. Sector B is the 30-m-wide buffer zone that protects the features of sector A. Sector C is the transitional area between the coastal and inland areas. The policy forbids certain types of development in each sector. Naturally, these activities are less restricted in sector C than sector B.

If you plan on building, renovating, or developing in one of those sectors, or anywhere near the sea, find out

more about this policy and how you can protect your waterfront property. You can even download a document about the waterfront policy from the government Web site or get a copy from the NBDE. At the present time, the policy is still a work in progress.



Illegal fishing... So not worth it!

Here are examples of illegal situations or activities:

- Possession of lobsters that are too small,
- Harvesting of mollusks in contaminated sectors,
- Refusal to throw a large salmon back in the water after catching it,
- Fishing off season or without a permit,
- Destruction of fish habitat,
- Unauthorized landing, and
- Illegal sale of fish.

To denounce illegal activities that you have witnessed, call Crime Stoppers at:
1-800-222-TIPS
1-800-222-8477

<http://www.nb.crimestoppers.ca>

above the average high tide mark and require municipal, provincial, and federal permits. Any proposal for a structure of this type must first be submitted to the local District Planning Commission or the NBDE.

Certain structures, such as boat ramps, are allowed in the area below the average high tide mark, but they must comply with all the provincial and federal laws and guidelines.

☐ **Can we drive on the beach?**

The Trespass Act categorically forbids driving on the beach in a motor vehicle. This type of activity simply cannot be allowed in such a fragile environment and would diminish the pleasure of others enjoying the area.

☐ **Fisheries and Oceans Canada and the federal laws**

The federal laws that protect our watercourses involve the development of strategies and the implementation of management plans and programs for the protection of coastal waters and of sea and freshwater habitats.

Within the scope of these laws, Fisheries and Oceans Canada develops strategies and management plans in collaboration with other departments, provincial governments, and other entities such as Aboriginal organizations and other coastal communities. Moreover, the Department of Fisheries and Oceans is very interested in community

initiatives for the stewardship of fish habitat.

One example of the regulation system put in place by the federal government is that it's strictly forbidden to build a structure that will prevent fish from moving freely or to carry out any residential or commercial activity that pollutes or poisons the water of fish habitat.

Waterfront property owners must also comply with federal laws that are not necessarily administered by Fisheries and Oceans Canada. The table on the following page gives an outline of most of the federal laws that apply, directly or indirectly, to waterfront property owners.

Réjean Roy ©



Fisheries and Oceans Canada is responsible for implementing strategies to protect fish and their habitat.

Federal Law	Section	Application
aa Fisheries Act	Obstruction of fish migration (from Section 20)	• Every obstruction across or in any stream where the Minister determines it to be necessary for the public interest that a fish-pass should exist shall be provided by the owner or occupier with a durable and efficient fish way or canal around the obstruction, which shall be maintained in a good and effective condition by the owner or occupier, in such place and of such form and capacity as will in the opinion of the Minister satisfactorily permit the free passage of fish through it.
	Protection of fish habitat [extract from Paragraph 35 (1)]	• No person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat.
	Prevention of pollution [extract from Paragraph 36 (3)]	• No person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water.
Oceans Act	National Oceans Management Strategy (extracts from Sections 29 and 30)	• [...] shall lead and facilitate the development and implementation of a national strategy for the management of estuarine, coastal and marine ecosystems in waters that form part of Canada or in which Canada has sovereign rights under international law.
	Principles (extract from Section 30)	• The national strategy will be based on the principles of (a) sustainable development, that is, development that meets the needs of the present without compromising the ability of future generations to meet their own needs; (b) the integrated management of activities in estuaries, coastal waters and marine waters that form part of Canada or in which Canada has sovereign rights under international law; and (c) the precautionary approach, that is, erring on the side of caution.
	Cooperation and agreements (summary of Section 33)	• This section contains guidelines for cooperation and consultation among departments and agencies, with particular reference to the collection, analysis, and dissemination of information in the areas of expertise of Fisheries and Oceans Canada.
	Marine protected areas (summary of Section 35)	• This section allows Fisheries and Oceans Canada to designate a marine area for the conservation and protection of fish habitat or any marine species.

<i>Oceans Act (continued)</i>	Coast Guard services (summary of Section 41)	• Fisheries and Oceans Canada is responsible for Coast Guard services, including security, aids to navigation systems and services, marine communications and traffic management services, and the search and rescue program.
<i>Navigable Waters Protection Act</i>	Construction of works in navigable waters (summary of Sections 5 and 6)	• No work shall be built or placed on any navigable water unless the Minister deems it fit.
<i>Migratory Birds Convention Act, 1994</i>	Protection of migratory birds and their nests (summary of Section 12)	• This section presents various ways to protect migratory birds. In particular, it is forbidden to damage, destroy, or disturb their nests. This section also proposes the creation, control, and management of protected areas for migratory birds.
bb <i>Species at Risk Act</i>	Protection of species survival (summary of Section 32)	• This section forbids the killing or harming of endangered wildlife species.
	Protection of the habitat of endangered species (summary of Section 33)	• This section forbids the destruction of or damage to the habitat of endangered wildlife species.
<i>Canadian Environmental Assessment Act</i>	Protection of the environment and human health, and application of the precautionary principle	• This law ensures that all projects to be undertaken are closely examined before any decision about them is made. • It promotes sustainable development favourable to both a sound environment and a sound economy. • It stimulates communication, collaboration, and coordination of activities between various levels of government as part of the environmental assessment process of a project.

Contacts

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Department of Natural Resources (DNR)

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Fisheries and Oceans Canada, Gulf Region (DFO)

**General Information Line for the Gulf
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506-851-7747**

Non-profit organizations dedicated to the management of a watershed

Note: Over the years, some groups disband, and new ones start up. For an up-to-date list, please contact the following:

New Brunswick Department of Environment – Sustainable Planning Branch Outreach and Partnering

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Fredericton Fish and Game Association

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□ Reference documents to consult if you need more information on laws, policies, and other topics

Department of the Environment. (1990). *Water: no time to waste – a consumer's guide to water*. Government of Canada.

Department of Environment and Local Government. *Understanding the law: a guide to New Brunswick's Water Classification Regulation* (brochure).

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Department of Environment and Local Government. *How to chlorinate your well water* (brochure).

Department of Environment and Local Government. *GREEN home and cottage: A quick reference guide; quick*

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Kevin Murphy. (2003). *Proposed provisional classifications within the area of interest for the Chaleur Bay Watersheds Group under the Water Classification Regulation*. Chaleur Bay Watersheds Group.

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Omer Chouinard and Jean-Paul Vanderlinden. *Plan de gestion environnementale de la baie de Caraquet*. Université de Moncton.

Partenariat pour la gestion intégrée du bassin versant de la baie de Caraquet. (2004) *Ménage ton rivage 2004, rapport d'activité pour l'est du Nouveau-Brunswick*.

Petitcodiac Watershed Monitoring Group. (2004). *Project report*. Wildlife Trust Fund.

Sarah Kipp and Clive Callaway. (2002). *On the living edge*. Federation of British Columbia Naturalists.

Tom Murdoch, Martha Cheo, and Kate O'Laughlin. *Streamkeeper's field guide*. The Adopt-A-Stream Foundation.

Washademoak Environmentalists. *Living with the land, our watersheds in times of change*.

□ Web Sites

- Province of New Brunswick
www.gnb.ca
- Fisheries and Oceans Canada, Gulf Region
www.glf.dfo-mpo.gc.ca/index-e.html
- New Brunswick Environment Industry Association
www.nbeia.nb.ca
- The Living by Water Project
www.livingbywater.ca
- Parents Against Pesticides
www.parentsagainstpesticides.ca
- Georgia Strait Alliance
www.georgiastrait.org
- Extension Notes, Rideau Valley Conservation Authority
www.lrconline.com/EN_splash.html
- Crime Stoppers (against illegal fishing)
<http://www.nb.crimestoppers.ca>

□ A few definitions

Aquatic fauna: A collection of animal species living in salt- or freshwater.

Aquatic life: Plant and animal species that live, totally or partially, in an aquatic community, such as fish and aquatic invertebrates.

Aquifer (noun): A permeable, porous area of soil that allows subterranean water to flow and also holds water.

Aquiferous (adj.): Containing water, such as the water table.

Bacteriology: The branch of microbiology that studies bacteria and bacterial infections.

Benthic macroinvertebrate: An aquatic insect or other invertebrate that lives, totally or partially, in a

watercourse or at the bottom of a stream. It is visible to the naked eye.

Ecosystem: The natural environment, including both living (animals and plants) and non-living (water, soil, etc.) organisms, which establish multiple interactions with each other. Lakes, forests, and peat bogs also form part of the ecosystem.

Erosion: The wearing away and transformation of the landform by atmospheric agents. There are various kinds of erosion: fluvial, aeolian, glacial, etc.

Hydrological cycle: The natural water cycle.

Incubation: For many vertebrates, egg protection or growth.

Invertebrates: Animals without a spine. Worms, insects, and mollusks are examples of invertebrates.

Microbiology: That branch of biology that studies microorganisms.

Microorganism: A microscopic living organism.

Oxygen saturation: A relative measure of the amount of dissolved oxygen in water. A sufficient quantity of dissolved oxygen is one of the basic requirements of a sound aquatic system.

Parameter: A data element that clarifies research results.

Pathogen: Any agent that causes illness.

Sedimentation: Particles that are suspended in a liquid and settle.

Spawning: The propagation of fish.

Spawning ground: A place in which fish are known to breed and spawn.

Topography: A graphic representation of a lot with its natural or artificial details.

Trophic status: The state of water in terms of the amount of nutrients it contains.

