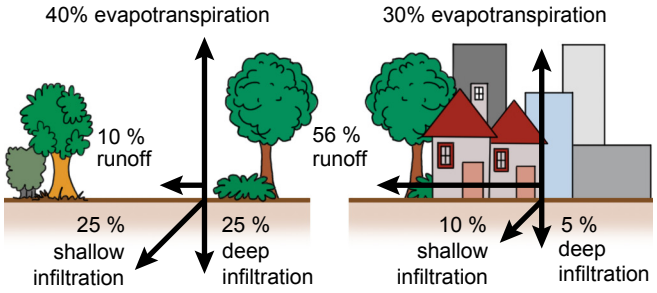
STORM WATER refers to both rain water and melted snow.



Adapted from the Guide de gestion des eaux pluviales, gouvernement du Québec

Much of the rainwater and melted snow is absorbed into the ground, a portion is blocked by vegetation and the rest flows into the lakes and streams. Natural environments manage the hydrologic cycle by optimizing ground infiltration and evapotranspiration, allowing only small amounts of water to run off.

Human interaction with the environment, particularly through urban development, has caused vegetated areas to be replaced by impervious ones. These transformations have significantly altered the natural flow of water by increasing surface runoff.

Sewer and retention systems were designed and built to capture surface runoff. However, the advent of heavier precipitations brought on by climate change and reduced soil permeability have led to the inability of engineering works to cope efficiently with storm water, thus negatively impacting on the environment and jeopardizing both humans and infrastructure.

DID YOU KNOW ?

- ☑ Increasingly heavy downpours and faster rates of flow have aggravated shoreline erosion, caused the disappearance of riparian vegetation, and generated massive loads of sediments.
- ☑ The heavier, more frequent precipitations and larger volumes of runoff have caused flood zones to expand and shortened intervals between floods.
- ☑ The inability of urban sewer systems to cope with heavy rains has produced overflow into the streets as well as flooding, even where there are no streams.
- ☑ The runoff from paved streets, parking lots and lawns carries all sorts of pollutants (heavy metals, petroleum products, salts, pesticides, chemical fertilizers...) directly into the lakes and streams.

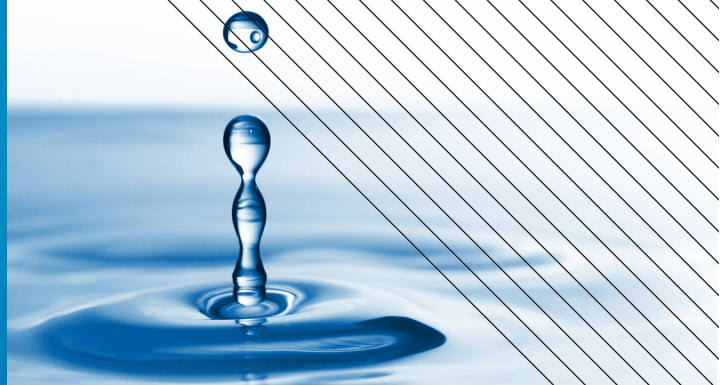
A KEY CHALLENGE for the FUTURE

Sustainable storm water management has become an key issue in urban development. Problems related to flooding and sewer backups are increasingly present in today's climate change context (increased frequency and scale of extreme meteorological events). We must, therefore, react quickly by integrating these new management practices into the design and construction phases of every project.

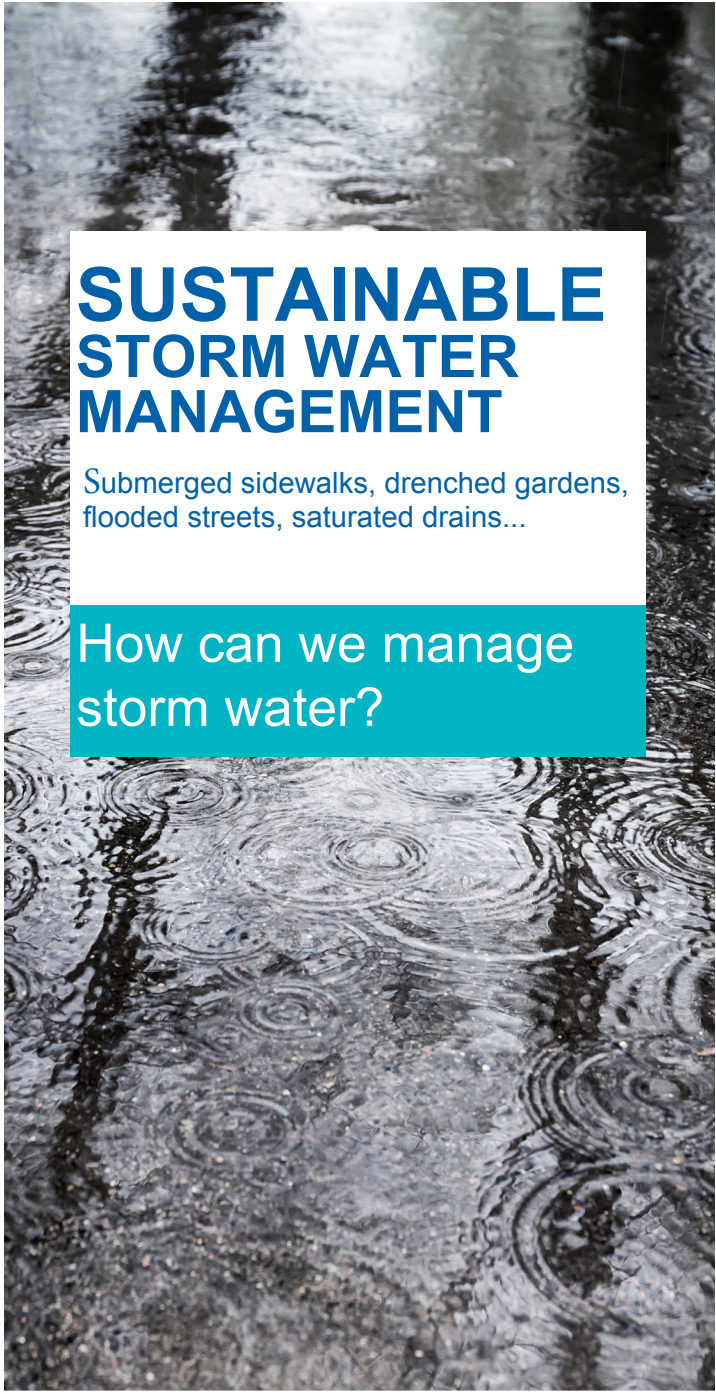
The environment, our quality of life and our security can derive multiple direct benefits with the application of sustainable storm water management practices. Indeed, good planning and implementation can reduce the cost of infrastructure construction, repair and maintenance.

Please consult the Événements section of our Internet site (in French only) for information on our workshops.

www.reseau-environnement.com



Réseau Environnement wishes to thank the volunteers of its Sustainable Storm Water Management Committee for their invaluable help in the preparation of this pamphlet, and to the Municipality of Austin for providing the English version.



SUSTAINABLE STORM WATER MANAGEMENT

Submerged sidewalks, drenched gardens, flooded streets, saturated drains...

How can we manage storm water?

Réseau Environnement

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What is the SUSTAINABLE MANAGEMENT of STORM WATER RUNOFF?

In a sustainable storm water management model, surface runoff is treated as a resource, not a nuisance. Rather than trying to drain the water overflow as quickly as possible, the preferred strategy calls for onsite water detention, a slower rate of drainage, and the use of retention and decontamination methods before it reaches the lakes and streams. Every citizen, every developer and every city and municipality can play a role to counter this problem.

There are three types of practices, classified in accordance with the level at which they are applied within the storm water management process:

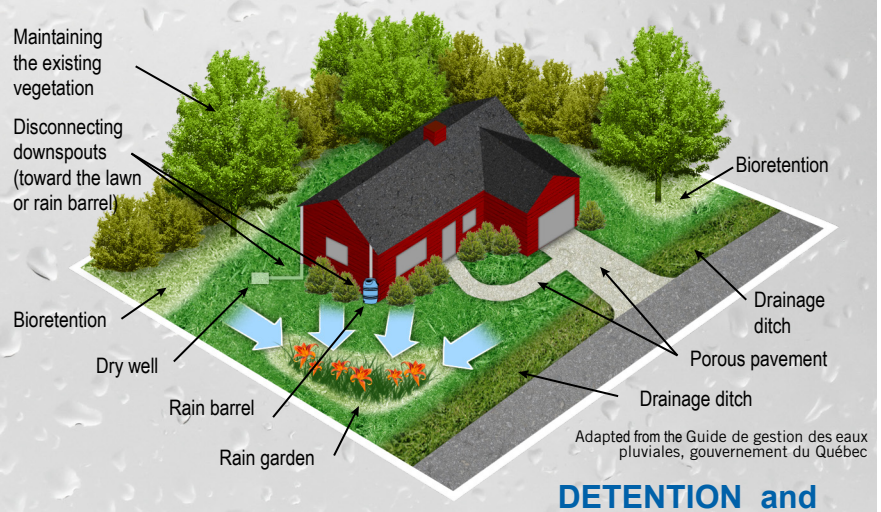
- → Source controls refer to the practices applied at the point where the water is captured (e.g.: a rain barrel)
- → Conveyance controls refer to the practices applied to assist water conveyance (e.g. a vegetated ditch)
- → End-of-pipe controls refer to the practices applied downstream to take charge of unfiltered or evaporated water (e.g. wet or dry retention ponds)

TIP!

Do not mow your ditch: vegetation growth is beneficial to the environment.

The presence of vegetation reduces water velocity, thereby fostering greater ground infiltration and a better filtering of sediments.

A few examples of SOUND PRACTICES



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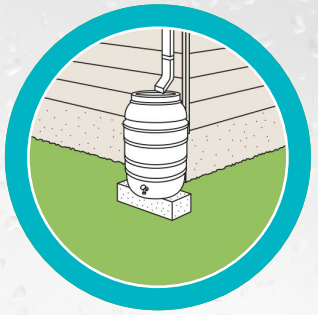

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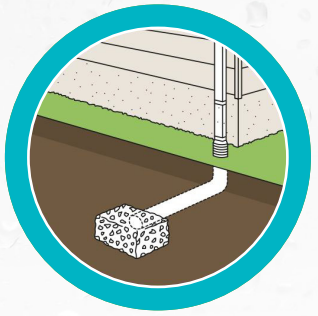
CISTERNS and BARRELS

The simplest technique to collect rainwater consists in disconnecting the downspout from the foundation drains and to direct it into a rain barrel or cistern. The collected water can be used for watering the lawn and garden.



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THE DRY WELL

A drainage or percolation dry well can replace the rain garden. Consisting of a pit set close to a building, it is used to collect water discharged from the roof or from paved areas and channel it slowly toward the deeper layers of the ground.

THE SWALE

A swale is generally used along roads and parking lots to retain storm water runoff and channel it toward an outlet. Its vegetation promotes filtration and can even help bioretention. The swale is particularly suited for residential districts, where it can appear as an extension of the front lawn.

THE RAIN GARDEN

The rain garden is built in a shallow surface depression and contains specific plant species and soil media to receive, detain, infiltrate and filter water discharged from roofs and paved surfaces, thereby effectively reducing the volume of runoff and contributing to groundwater recharge.

PERMEABLE PAVING

Permeable surfaces allow rain water to seep through and filter into the ground. There are several types of permeable paving available, including porous concrete or asphalt, porous paving stones and plastic grids.

DETENTION and RETENTION BASINS

Detention and retention basins are used to collect storm water runoff. A detention, or “dry” basin, serves mainly as a temporary water storage area, while the retention basin stores a permanent pool of water. Decantation and other biological processes in the retention basin also provide water quality benefits by reducing the concentration of pollutants.

THE GREEN ROOF

Depending on the model, a green roof can be used to cultivate small plants or even as a recreational facility. The rainwater retained by the green roof serves to irrigate the plants, thus reducing discharge onto the ground and into storm drains.