



Stormwater and Wetlands

This fact sheet answers common questions about using wetlands to treat stormwater and describes stormwater best management practices.

Can stormwater be discharged to a wetland?

Yes. However, the water quality and the water level must be controlled to ensure the essential character of the wetland is maintained or improved. Some level of treatment is generally necessary before stormwater is discharged to a wetland.

What laws require that I protect wetlands?

Wetlands are regulated at the local, state, and federal level. The type and size of the wetland and the impacts of the proposed activity will determine how a specific wetland is regulated.

■ Many local jurisdictions have ordinances that specifically regulate wetlands or stormwater, or both.

■ Wetlands are regulated under the state **Shoreline Management Act (SMA)**, Chapter 90.58 RCW. The SMA is administered by local jurisdictions with state oversight. The SMA requires that projects be evaluated in terms of overall impact and consistency with the policies and goals of the local Shore-

line Master Program and the SMA.

■ Wetlands are “waters of the state” under state **Surface Water Quality Standards**, Chapter 173-201A WAC. The water quality standards apply to wetlands and to stormwater flowing into wetlands. The standards require that all stormwater discharges be treated using best management practices (WAC 173-201A-160).

■ Wetlands are “waters of the U.S.” under the federal **Clean Water Act (CWA)**. The CWA regulates discharges of wastewater and stormwater. Sections 404 and 401 regulate the place-

ment of fill and other activities in wetlands.

How should stormwater be treated to protect wetlands?

State rules under the Water Pollution Control Act require that stormwater be treated using Best Management Practices. Best Management Practices are physical and structural techniques, and management practices that prevent or reduce water pollution.

There are generally three types of BMPs:

■ **Source control BMPs** keep pollutants from entering

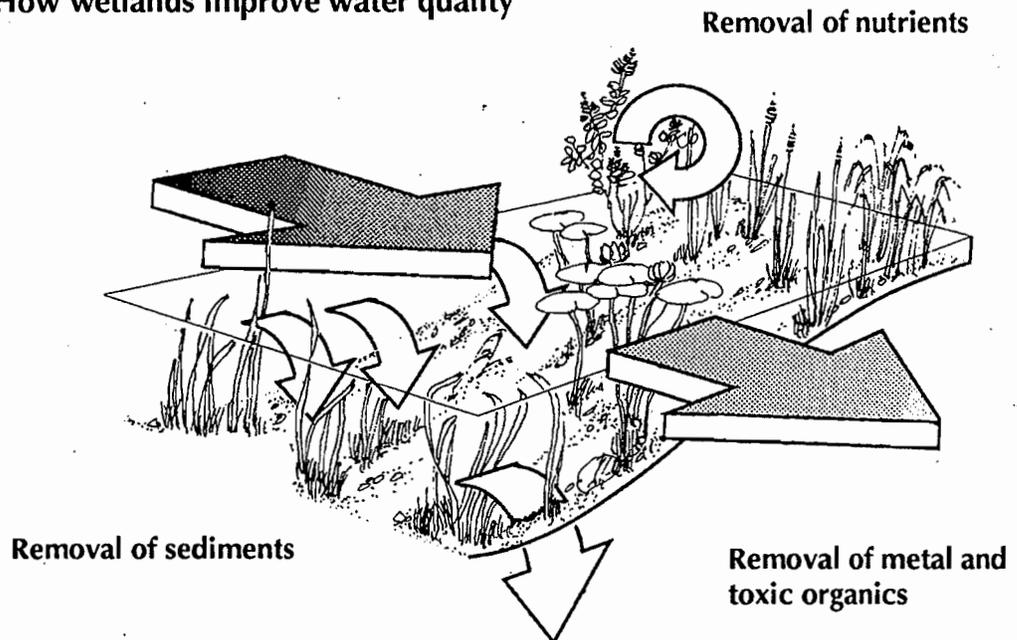
stormwater in the first place.

■ **Streambank erosion control BMPs** typically control the rate, frequency, and flow duration of stormwater runoff releases.

■ **Stormwater treatment BMPs** such as infiltration and detention basins remove pollutants from stormwater.

Source control BMPs are preferred to treatment BMPs, if they provide adequate protection, because they can target specific pollutants, tend to be less costly, and take up less space on the landscape. All three types of BMPs may be necessary for a particular project when it is

How wetlands improve water quality



Wetlands can improve water quality through:

- sediment removal (plants slow water velocity, sediments drop out, and roots bind the accumulated muck),
- removal of metals and toxic organics (chemicals trapped with soil particles are buried in sediments), and
- nutrient removal (nitrogen and phosphorus are taken up by plants and/or bound up in sediments).

necessary to discharge stormwater offsite.

Where can I find out more information about Ecology's recommended BMPs?

More information is available in Ecology's Stormwater Management Manual for the Puget Sound Basin (Ecology Publication #91-75) or an equivalent manual adopted by many local jurisdictions.

The Manual has minimum requirements for:

- source control of pollution;
- treatment of pollutants such as sediment, oil, and other wastes during construction; and
- controls for discharges to waters of the state, including wetlands.

Ecology uses the minimum requirements in the Manual as a general measure of compliance with the Water Quality Standards. If you are taking these basic preventive measures, you are assumed to be in compliance.

Can stormwater treatment facilities be used to mitigate the loss of natural wetlands?

Usually not. Wetlands constructed for the primary purpose of treating stormwater are considered treatment facilities, not natural wetlands or other waters of the state.

Wetlands created to mitigate the loss of natural wetlands are regulated as natural wetlands, i.e., as waters of the state. Occasionally, additional wetland

area is created beyond what is required for treatment.

Determining if an area qualifies for mitigation can depend on issues such as long term maintenance, habitat quality, and location of the wetland.

Can stormwater facilities be located within wetland buffers?

Ecology's Stormwater Manual states that stormwater treatment systems shall not be located in buffers (Chapter I-2). The intended purpose of a wetland buffer is to provide habitat and cover for those species that live in or use wetlands for feeding or nesting. Many species of wildlife use wetlands for one purpose, e.g., feeding, and require the adjacent upland habitat for another, e.g., nesting. Stormwater treatment systems generally do not provide the diversity of habitat found in upland buffers, especially if the stormwater facility is fenced. The operation and maintenance required of a stormwater facility may also create disturbances within the adjacent wetland.

If wetlands improve water quality and store flood water naturally, why not use them?

Wetlands improve water quality and provide flood storage. However, these and other beneficial uses are degraded by overuse of the wetland. This is why Ecology requires stormwater to be treated and wetland hydrology to be maintained.

Recent research has

shown that changing the natural water pattern of a wetland can have significant detrimental effects on the beneficial uses of a wetland. Changes can include:

- increasing the depth of the water for extended periods of time, especially in the growing season;
- increasing the peak (high and low) water level fluctuations;
- increasing the rate of sediment deposition;
- increasing the length of the summer dry period; and
- increasing the duration of above-normal water levels.

Changing the natural water pattern of a wetland can cause more harm than changing the chemistry through pollutants.

How does Ecology review projects for stormwater impacts to wetlands, and what information is needed to conduct that review?

Ecology evaluates a project in terms of overall project impact and consistency with local, state, and federal requirements. For Ecology, a key question is - "Does the project comply with the Water Quality Standards?" Generally, this is determined by the level of pretreatment; does it meet the minimum requirements of the Stormwater Manual?

The essential element of the Water Quality Standards is the antidegradation policy (WAC 173-201A-070) which states that all beneficial uses

of state waters be maintained and protected.

Another factor for project review is the location of the project. If a wetland is in SMA jurisdiction, the requirements of the local Shoreline Master Program may apply.

What permits do I need for my project?

That depends on the particulars of your project. Ecology's Permit Assistance Center can help you work through state permit processes. Call the Center in Olympia at (360) 407-7037 (e-mail ecypac@ecy.wa.gov).

You should also contact your local planning department. Many local governments are now using the Joint Aquatic Resource Permit Application (JARPA). This form allows an applicant to fill out one application that is also used by state and federal permitting agencies.

If my stormwater facility discharges to a wetland, do I have to maintain and monitor the wetland?

A constructed stormwater treatment facility will almost always require some routine maintenance. This will depend on the intended use of the facility.

If the treatment facility discharges to a natural wetland, monitoring may be required as a permit condition from the local jurisdiction or state and federal agencies, depending on the expected risk to the wetland.

A stormwater best management practices primer

Best Management Practices are physical and structural techniques, and management practices that prevent or reduce water pollution. BMPs protect the beneficial uses of aquatic resources by:

- reducing pollutant loads and concentrations;
- reducing water level fluctuations in wetlands; and
- protecting wetland habitat in general.

Perhaps the most important component of project planning is selecting the most appropriate BMP for the situation. Ecology's Stormwater Manual will help you choose among the many options.

Understanding the site

Understanding the existing hydrology of a wetland is the key to designing appropriate BMPs for discharging to any particular wetland.

Monitoring a wetland for multiple wet and dry cycles is the best way to get this information. However, because this is often impractical, Ecology's Stormwater Manual describes ways to determine wetland hydrology in the absence of direct monitoring information.

Basic types of BMPs

The types of BMPs are source control, streambank erosion control, and runoff treatment.

Source control

Source control BMPs aim to prevent pollution or other adverse effects of stormwater

from occurring. These can include using mulches and covers on disturbed soil, covering outside storage areas, or tracking down and eliminating illicit connections to storm drains.

For new development or redevelopment, streets, parking lots and buildings can be designed to minimize stormwater runoff.

This can be very effective in reducing stormwater runoff peak flow, its volume, and the load of pollutants it carries. Runoff from small storms can sometimes be eliminated.

Streambank erosion control

Streambank erosion control (channel stabilization) BMPs typically control the rate, frequency, and flow duration of stormwater runoff releases. Using streambank erosion control measures help maintain the natural water cycle and water level fluctuations (hydroperiod) in a stream or wetland.

Streambank erosion is often the single largest source of sedimentation within a watershed and is a major factor contributing to the destruction of aquatic habitat.

Runoff treatment

Runoff treatment BMPs include facilities that remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, soil adsorption, or other means.

Runoff treatment BMPs can accomplish significant

levels of pollutant load reductions if properly designed and maintained. However, the increase in pollutant loads from urban areas is typically so large that, even with the use of BMPs, it is unlikely pollutant levels will be reduced to predevelopment conditions. While using predevelopment conditions as a basis of comparison may not be always practical, it does offer insight into the potential impacts of urbanization by showing the expected changes in water levels and water patterns in a wetland.

BMPs

This primer introduces the most common BMPs for treating runoff and controlling erosion.

Infiltration Practices - Infiltration is often the preferred method for controlling stormwater because it decreases both peak rates and volumes, and increases summer stream baseflows.

Water that is infiltrated becomes part of the ground water flow, but infiltration is not always a practical or effective alternative. Stormwater discharges to ground water are regulated by the Ground Water Quality Standards (Chapter 173-200 WAC).

If infiltration is not feasible, the alternative is large detention ponds that store runoff and release it at a very slow rate to minimize erosion and habitat destruction in general.

Dry Detention Basins - Dry detention basins are the most common type of detention facilities used throughout the world. To effectively function as water quality BMPs, they must hold stormwater runoff for relatively long periods.

Retention Ponds - Retention ponds have a permanent water pool with a surcharge volume above the permanent pool elevation. Similar to detention basins, treatment is accomplished primarily by

