



State of Oregon Department of Environmental Quality  
Clean Water State Revolving Fund

# Guide 1: Municipal Stormwater Planning

Contact: [Chris Bayham](#)  
541-687-7356

[The Clean Water State Revolving Fund](#) offers below-market loans for all phases of stormwater management, from planning to construction. This guide provides resources for Clean Water State Revolving Fund applicants and borrowers.

The resources below are intended to assist planners, public works staff and consultants to identify barriers in existing land use development standards and provides several examples of how to integrate nonstructural controls into local codes. The loan program offers [a comprehensive guide to stormwater water management](#) on the program website.

## Stormwater management programs

A stormwater program is critical for a comprehensive planning approach to managing stormwater within a municipality, presenting policies to address flooding concerns and to protect water quality. There are seven key elements to a stormwater management program.

### 1. Identify a trigger for post-construction stormwater management requirements

The first element is a clear threshold for when post-construction stormwater controls are required in new development or redevelopment. The threshold might be expressed as a square footage of ground disturbance or impervious area creation/replacement, beyond which stormwater management practices would be required. Municipalities should set a threshold that considers the types of development that are expected to occur and the impact those land use changes will have on receiving waters.

### 2. Establish a retention requirement for stormwater volume reduction

Once the threshold for post-construction stormwater management requirements is established, a numeric site performance standard is needed for stormwater volume reduction and flow control. Referred to as a retention requirement, a portion of stormwater generated on a site must be retained to mimic predevelopment hydrology. To help meet the numeric retention standard, a developer and designer first use nonstructural stormwater controls to minimize the volume of stormwater discharged from a site. If structural controls are needed, [green infrastructure](#) could help maintain and restore the natural hydrology by harvesting, infiltrating and allowing the evapotranspiration of stormwater.

### 3. Set a treatment requirement for structural controls

A numeric treatment standard is also established to ensure that a portion of the stormwater generated from new impervious surfaces receives an appropriate level of treatment before it is discharged to a channel or conveyance system connected to waters of the state. This applies when the target volume of stormwater in the retention requirement cannot be retained onsite to meet this requirement.

### 4. Use nonstructural stormwater controls first

Applying nonstructural stormwater controls during site design will reduce runoff and may eliminate or reduce the number and size of structural stormwater controls and the costs associated with them. Municipalities can enact land

use policies and ordinances to direct growth to areas that have existing infrastructure, protect wetlands and riparian areas, maintain or increase open space and minimize impervious surfaces.

## **5. Follow nonstructural controls with structural stormwater controls giving priority to green infrastructure**

Structural controls are physically designed, installed and maintained practices to prevent or reduce the discharge of pollutants in stormwater. “Green” refers to stormwater management systems designed to help maintain and restore natural hydrology by harvesting, infiltrating and allowing the evapotranspiration of stormwater. Such controls include grassed swales, sand filters and infiltration basins and trenches.

## **6. Specify design requirements for structural controls to treat off-site discharge**

To ensure that the treatment standard is achieved, the municipality develops sizing criteria and design specifications for the structural controls. Proper design and subsequent operation and maintenance procedures for structural stormwater controls are critical to achieving effective pollutant removal. Many municipalities with a post-construction stormwater control program establish requirements to ensure that they are actually installed, designed, constructed and maintained to meet the required treatment standard. Some stormwater manuals or management programs specify drainage requirements in addition to a site performance standard.

For structural stormwater controls on private property, municipalities establish maintenance agreements with the private entity that owns and operates the control to ensure that it is properly maintained after construction. If a structural control will become part of the public stormwater system, securing bonds prior to the installation is important so the municipality does not acquire an incomplete, problematic or ineffective control. A performance bond is a financial tool required of a contractor to ensure that funds are available to complete a structural control and ensure it is capable of meeting the treatment standard, should the contractor fail to achieve these two objectives.

### **Master planning**

Stormwater master planning is “public facilities planning” as defined in Oregon Administrative Rule, Chapter 660. By definition, a public facilities plan is a support document to a local comprehensive land use plan. Cities and counties must develop and adopt a public facility plan for areas within an urban growth boundary with a population greater than 2,500. A stormwater master plan must contain the following information:

1. An inventory and general assessment of the condition of all the significant public facility systems which support the land uses designated in the acknowledged comprehensive plan
2. A list of the significant public facility projects which are to support the land uses designated in the acknowledged comprehensive plan.
3. Rough cost estimates of each public facility project
4. A map or written description of each public facility project's general location or service area
5. Policy statement(s) or urban growth management agreement identifying the provider of each public facility system. If there is more than one provider with the authority to provide the system within the area covered by the public facility plan, then the provider of each project shall be designated
6. An estimate of when each facility project will be needed
7. A discussion of the provider's existing funding mechanisms and the ability of these and possible new mechanisms to fund the development of each public facility project or system.

## Minimizing planning costs

To reduce costs, DEQ recommends that municipalities use the stormwater master planning process to develop and implement an [Illicit Discharge and Detection Plan](#) as part of their stormwater management program. Municipalities can use the inventory required in master planning to search for improperly designed or failing sanitary sewer infrastructure that causes chronic illicit discharges to the stormwater conveyance system.

Evaluating stormwater conveyance systems for chronic illicit discharges provides municipalities with an opportunity for [integrated stormwater and wastewater planning](#). An integrated evaluation may also offer cost savings when replacing failing, collocated wastewater and stormwater conveyance systems. Municipalities can use this information to prioritize their capital investments for greater cost savings and pollutant load reductions when complying with Total Maximum Daily Load and [Municipal Stormwater Permit requirements](#).



**Capturing stormwater onsite through a bioswale, shown above, is effective and adds attractive landscaping features.**

A smaller municipality may want to limit the scope of stormwater master planning to a priority stormwater drainage basin to update its master plan basin-by-basin. This allows the municipality to pursue a phased financing approach by applying for a small CWSRF planning loan or a small grant through another agency.

## Pre-design report

Once a stormwater or wastewater infrastructure project is identified in the master plan, a pre-design report is needed that describes, in detail, the recommended project using preliminary design drawings and other supporting information. This may include the basis of the design, design criteria, site plan, process and instrumentation diagrams, hydraulic profile, major equipment list and preliminary cost estimates. DEQ strongly recommends that a pre-design report consider the environmental factors that may influence or constrain the project to avoid triggering environmental permits. Considering environmental factors will help a loan applicant cost-effectively address the [State Environmental Review Process](#) required in the federal funding of infrastructure projects. These requirements may surface as a result of federal permitting requirements, such as a U.S. Army Corps of Engineer's Section 404 permit, even if federal funding is not involved.

## Stakeholder involvement

Oregon's Statewide [Planning Goal 1](#) requires public input when developing a stormwater management plan and creating a post-construction stormwater control program for development. Public input and involvement is valuable in developing a program that addresses stakeholder concerns. Costs related to outreach and involvement can be included in a loan.

DEQ recommends that municipalities review EPA's web-based "[Public Participation Guide](#)" and the information in this section prior to initiating a stormwater planning project. In Step 3 of the process planning section, EPA's guide provides a decision-making flow chart to determine the level of public participation: inform, consult, involve, collaborate and empower. Chapter 1 of the Center for Watershed Protection's [Better Site Design Handbook](#) includes a section on convening key stakeholders to revise codes to implement low impact development. DEQ's Clean Water State Revolving Fund staff offer technical assistance for public involvement related to a post-construction stormwater control program. This may include stakeholder training on stormwater management using low impact development.

For additional information, contact [Chris Bayham](#) from DEQ's Clean Water State Revolving Fund at 541-687-7356.

## **Alternative formats**

DEQ can provide documents in an alternate format or in a language other than English upon request. Call DEQ at 800-452-4011 or email [deqinfo@deg.state.or.us](mailto:deqinfo@deg.state.or.us)