

# General Guidance- Post Construction

## Post-Construction Runoff Control

### Link:

[http://www.stormwatercenter.net/Model%20Ordinances/Post%20Construction%20Stormwater%20Management/post\\_construction\\_runoff\\_control.htm](http://www.stormwatercenter.net/Model%20Ordinances/Post%20Construction%20Stormwater%20Management/post_construction_runoff_control.htm)

[Post-Construction Runoff Model Ordinance](#) Do you need to start a stormwater or watershed protection program from scratch? Well, you'll probably need to write a local ordinance to make it happen. Make your life easier by adapting the model ordinance we provide here.

In addition to a [Post-Construction Runoff Model Ordinance](#), this website contains ordinances from around the country:

[Maryland Department of the Environment Proposed Stormwater Management Regulations](#) The Maryland Design Manual and Regulations were recently revised and are currently one of the better examples of stormwater management planning. For a look at the Maryland Design Manual, contact the Maryland Department of the Environment at 2500 Broening Highway, Baltimore, MD 21224, phone #410-631-3000 or toll free #1-800-633-6101.

[Grand Traverse County, Michigan Soil Erosion and Stormwater Runoff Control Ordinance](#) This ordinance addresses both construction and post-construction runoff control and maintenance easements for stormwater facilities.

[City of Seattle Stormwater, Grading and Drainage Control Code](#) A comprehensive ordinance that deals with many of the issues of stormwater management, including language on administration and enforcement considerations.

[St. Johns River Water Management District, Florida - Environmental Resource Permits: Regulation of Stormwater Management Systems](#) A good example of a regional approach to stormwater management in a state where development pressures are extremely intense.

[City of Santa Monica, California Municipal Code of Ordinances - Urban Runoff Pollution](#) This ordinance is noteworthy for its language on non-structural BMP requirements such as pollution prevention programs and good housekeeping practices.

The management of stormwater runoff from sites after the construction phase is vital in controlling the impacts of development on urban water quality. The increase in impervious surfaces such as rooftops, roads, parking lots, and sidewalks due to land development has a number of effects on aquatic systems. First, increases in imperviousness create a corresponding increase in the total volume of stormwater runoff from a site. This increase in runoff volume leads to degradation of stream channel habitat and increases in the occurrence of flooding. Heightened levels of impervious cover have also been associated with stream warming and loss of aquatic biodiversity in urban areas. Runoff from impervious areas can also contain a variety of pollutants that are detrimental to water quality, including sediment, nutrients, road salts, heavy metals, pathogenic bacteria, and petroleum hydrocarbons. Efforts to control the impacts of imperviousness and stormwater runoff are typically in the form of structural and

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nonstructural management practices that either prevent initial pollutant loadings or detain and treat stormwater to reduce pollutant levels and control the volume of runoff.

The main goal of a stormwater management ordinance for existing development is to limit surface runoff volumes and reduce water runoff pollution loadings. To create the most effective ordinance possible, the following sections are required in any stormwater runoff ordinance. First, language referring to a guidance manual for BMP design and implementation is necessary. This design manual is created by a designated stormwater management agency and contains information on sizing criteria, performance criteria, and guidance on selection and location of BMPs. By referring to the current version of a design manual, the ordinance will not need to change to reflect new technological advances or changes in stormwater management experiences within a community. Changes are instead incorporated into the design manual and the ordinance simply states that you use the criteria in current design manual. Second, the ordinance should have language requiring that all development projects include a post-construction stormwater management plan. The ordinance should include information on what the contents of an acceptable plan are and who is responsible for operation and maintenance. The operation and maintenance section will include a mechanism for inspection of all stormwater control practices. [For examples of stormwater operation and maintenance ordinances, including a model ordinance that deals with inspection issues, click here.](#) A final requirement is language explaining the mechanisms for enforcement of the requirements of the ordinance, including the civil and criminal penalties that may apply.

There are other ideas that can be included in an ordinance to improve its ability to control stormwater runoff. The ordinance could include what nonstructural and structural stormwater practices are allowed within the community. Communities may also wish to add language regarding on-site stormwater requirements and whether off-site treatment is an option. The example ordinances provided here include language dealing with each of the issues above, and communities should examine each ordinance for the language that is appropriate for their stormwater program.

### **Maintenance Agreements and Arrangements**

#### **Link:**

[http://www.stormwatercenter.net/Manual\\_Builder/Maintenance\\_Manual/4Maintenance\\_Agreements/Maintenance%20Agreements%20Introduction.htm](http://www.stormwatercenter.net/Manual_Builder/Maintenance_Manual/4Maintenance_Agreements/Maintenance%20Agreements%20Introduction.htm)

A stormwater maintenance agreement is a formal contract between a local government and a property owner designed to guarantee that specific maintenance functions are performed in exchange for permission to develop that property. Local governments benefit from these agreements in that responsibility for regular maintenance of the Stormwater Treatment Practice (STP) can be placed upon the property owner or other legally recognized party, allowing agency staff more time for plan review and inspection.

Maintenance agreements can be an effective tool for ensuring long-term maintenance of on-site STPs. The most important aspect of creating these maintenance agreements is to clearly define the responsibilities of each party entering into the agreement. Basic language that should be incorporated into an agreement includes the following:

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## 1. Performance of routine maintenance

Local governments often find it easier to have a property owner perform all maintenance according to the requirements of a Design Manual. Other communities require that property owners do aesthetic maintenance (i.e., mowing, vegetation removal) and implement pollution prevention plans, but elect to perform structural maintenance and sediment removal themselves.

## 2. Maintenance schedules

Maintenance requirements may vary, but usually governments require that all STP owners perform at least an annual inspection and document the maintenance and repairs performed. An annual report must then be submitted to the government, who may then choose to perform an inspection of the facility.

## 3. Inspection requirements

Local governments may obligate themselves to performing an annual inspection of an STP, or may choose to inspect when deemed necessary instead. Local governments may also wish to include language allowing maintenance requirements to be increased if deemed necessary to ensure proper functioning of the STP.

## 4. Access to STPs

The agreement should grant permission to a local government or its authorized agent to enter onto property to inspect STPs. If deficiencies are noted, the government should then provide a copy of the inspection report to the property owner, and provide a timeline for repair of these deficiencies.

## 5. Failure to maintain

In the maintenance agreement, the government should repeat the steps available for addressing a failure to maintain situation. Language allowing access to STPs cited as not properly maintained is essential, along with the right to charge any costs for repairs back to the property owner. The government may wish to include deadlines for repayment of maintenance costs, and provide for liens against property up to the cost of the maintenance plus interest.

## 6. Recording of the maintenance agreement

An important aspects to the recording of the maintenance agreement is that the agreement be recorded into the local deed records. This helps ensure that the maintenance agreement is bound to the property in perpetuity.

Finally, some communities elect to include easement requirements into their maintenance agreements. While easement agreements are often secured through a separate legal agreement, recording public access easements for maintenance in a maintenance agreement reinforces a local government's right to enter and inspect an STP.

- [Stormwater Management Facilities Maintenance Agreement, City of Virginia Beach, VA \(ZIP file\)](#)
- [Stormwater Management/BMP Facilities Agreement, Albemarle County, VA](#)

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- [Declaration of Stormwater Facility Maintenance Covenant, City of Kent, WA](#)
- [Maintenance Agreement, City of Griffin, GA](#)

### Performance Bonds

#### Link:

[http://www.stormwatercenter.net/Manual\\_Builder/Maintenance\\_Manual/3Performance\\_Bonds/performance%20bond%20intro.htm](http://www.stormwatercenter.net/Manual_Builder/Maintenance_Manual/3Performance_Bonds/performance%20bond%20intro.htm)

A performance bond is a financial tool used to guarantee that in the event of a developer or contractor's default, funds are available to finish the construction of a Stormwater Treatment Practice (STP) and ensure its proper functioning. From the local government's point of view, the insolvency of a contractor during the construction contract will most likely result in delayed project completion and additional expenses for a completion contractor to finish the work. For this reason, it is common to require contractors to provide a bond from an independent bank or insurance company so that the local government can recover damages it may sustain as a result of the contractor's default up to a stipulated limit, often the estimated cost of construction for the STP.

Maintenance bonds are often required after construction to guarantee the performance of STPs. The role of a maintenance bond is to protect against design defects and/or failures in workmanship, and to guarantee that facilities constructed under a permit will be regularly and adequately maintained throughout the maintenance period. Maintenance bonds are often for a limited amount of time, at which time the responsibility for facility upkeep must be transferred to either a private party or to the local government. Due to the limited time-frame of maintenance bonds, they are often not a solution to ensure long-term maintenance.

### **Bond Language**

For communities interested in using performance or maintenance bonds, some basic information should be established in the bond language:

#### **1. Establish the total dollar amount required for the bond.**

Many stormwater ordinances set the amount of a bond as a percentage of the estimated cost. This number can vary, but most communities tend to set the sum of the performance bond at 100% of the estimated cost of construction for the STP. Maintenance bonds often use a figure of 10% of construction cost as the required amount.

#### **2. Specify the length of the bond.**

Bond lengths are typically required for fixed rate of time following a project milestone, after which the local government releases the bond. For construction performance bonds, this is usually after completion and final approval of the STP and then posting of a maintenance bond. The maintenance bond typically guarantees that the project owner will maintain the STP for a fixed period of time, most often up to two years. At the end of this time, a local government may inspect the system and extend the maintenance bond requirement if all contract stipulations are not met.

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### **3. Set the requirements for notice of defect or lack of maintenance.**

Local governments should outline the time period for completion of corrections to an STP after a notice of defect. In addition, the bond should establish a time period for response from the bonding company if the permittee fails to meet their obligation.

### **4. Bond enforcement.**

If the permittee does not successfully complete all required work or violates any requirement of the bond, the local government should spell out any enforcement measures it deems necessary to ensure project completion and proper maintenance. Bonds often provide for a local government to take corrective measures and to charge the cost to the permittee. These costs can include the actual cost of any work deemed necessary as well as administrative and inspection costs. Local governments may also reserve the right to solicit a new bid and contract for the correction of problems after expiration of the time limits, with liability for costs assigned to the current contractor and the insurance company or bank.

Samples of STP performance and maintenance bonds are provided below. Documents in .pdf format require the Adobe Acrobat reader, which you can [download for free here](#).

#### **[Erosion and Sediment Control and/or Stormwater Management Performance Bond, City of Virginia Beach, VA \(ZIP file\)](#)**

This is an example of a performance bond for implementation of erosion and sediment control or stormwater treatment practices. The bond terminates 60 days from the date of completion of land disturbing activities.

#### **[Standard Maintenance Bond, City of Melbourne, FL](#)**

This maintenance bond guarantees the city's protection from faulty materials, faulty workmanship or faulty design of the new facility for two years after construction.

#### **[Irrevocable Letter of Credit, City of Greenacres, FL](#)**

This irrevocable letter of credit performs that same function as a performance bond.

#### **[Kitsap County, WA, Stormwater Management Ordinance Section 4.0: Covenants, Sureties, and Liability Insurance](#)**

This section of Kitsap County's Stormwater Management Ordinance sets forth requirements for maintenance bonds that extend to two-years upon completion of construction. At this time, the facilities are inspected and may be accepted by the County for public maintenance. The language from this ordinance is provided below.

### **Section 4: Covenants, Sureties, and Liability Insurance**

#### **4.10. Site Stabilization**

Prior to the issuance of a Site Development Activity Permit and prior to beginning any construction activity on a project site, the owner of the project will be required to record a performance covenant or post a performance surety for site stabilization and erosion and sedimentation control. In addition, the owner may be required to provide a Certificate of Commercial Liability Insurance.

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This performance requirement for stabilization and erosion control should not be confused with the performance bond accepted at the time of final plat recording as a surety for construction items not yet completed. When a performance bond is accepted for a final plat in lieu of construction completion, the surety or covenant for stabilization and erosion control will be released, and the new performance bond shall cover site stabilization and erosion control along with the other incomplete construction items.

### 4.11. Performance Covenant for Site Stabilization

For project sites with less than 5 acres of land disturbing activity, a Performance Covenant may be recorded in lieu of performance surety for site stabilization prior to issuance of the Site Development Activity Permit to guarantee Kitsap County that temporary erosion and sedimentation control and permanent site stabilization measures will perform in accordance with the Stormwater Management Ordinance. This Covenant shall be recorded with the Kitsap County Auditor and shall run with the land until such a time as Kitsap County issues final acceptance of the permitted activities, or until a separate performance bond is posted prior to final plat approval. Upon issuance of final project approval, the Department of Public Works will record a document that extinguishes the Performance Covenant.

If the site work is determined by the Director to be in violation of the Stormwater Management Ordinance, the County may enforce the Performance Covenant to provide temporary and permanent site stabilization. In this case, the project proponent will be charged for all associated costs and, if required, a lien will be placed on the property

### 4.12. Performance Surety for Site Stabilization

The term "Bond" as defined in the Ordinance shall mean a surety bond, assignment of funds, or irrevocable bank letter of credit. For project sites with 5 or more acres of land disturbing activity, a Performance Bond shall be posted prior to issuance of a Site Development Activity Permit to guarantee Kitsap County that temporary erosion and sedimentation control and permanent site stabilization measures will perform in accordance with the Ordinance. The amount of the Performance Bond shall be as follows:

- One hundred fifty percent (150%) of the estimated cost of performing minor grading and installing temporary erosion and sedimentation control, and permanent site stabilization measures to bring the construction site into compliance with the Ordinance. A cost estimate shall be submitted by the project engineer subject to the approval of the Director. The minimum amount of the "Bond" shall be five thousand dollars (\$5000.00).

(OR)

- One thousand dollars (\$1000.00) per acre of land disturbing activity. No engineer's estimate is required.

If the site work is determined by the Director to be in violation of the Stormwater Management Ordinance, the County may use the Performance Bond to provide temporary and permanent site stabilization.

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All Performance Bonds shall run continuously until released by the County, and shall not be subject to an expiration or cancellation date.

### **4.20. Performance Bond for Uncompleted Site Improvements**

For single family residential developments, a Performance Bond shall be provided prior to the final recording of the plat/PUD, guaranteeing completion of all site improvements not yet completed. The amount of the Performance Bond shall be one-hundred fifty percent (150%) of the estimated cost of said improvements. The estimated cost of the construction shall be determined by a professional engineer subject to the approval of the Director.

All Performance Bonds shall run continuously until released by the County, and shall not be subject to an expiration or cancellation date.

### **4.30. Commercial Liability Insurance**

The owner of any project must provide a Certificate of Liability Insurance to the Department of Public Works prior to issuance of a Site Development Activity Permit. The liability insurance shall remain in force until final project approval is issued by the County. The commercial liability insurance shall be in the amount of not less than one million dollars (\$1,000,000.00) combined single limit bodily injury and property damage, with a two million dollar (\$2,000,000.00) aggregate. Such insurance shall include Kitsap County, its officers and employees as additional insureds, with respect to the terms and conditions of the policy.

### **4.40. Maintenance Bonds**

A maintenance bond is required for residential plats/PUD's and other projects for which maintenance of the stormwater facilities and/or roads is to ultimately be taken over by the County.

Prior to the final approval of construction and release of any performance sureties, a Maintenance Bond must be posted and maintained by the project owner for a period of two (2) years. The Maintenance Bond shall guarantee the stormwater facilities and roads constructed under permit against design defects and/or failures in workmanship, and shall guarantee that the facilities constructed under the permit will be regularly and adequately maintained throughout the maintenance period. At the end of this time, the County will inspect the system and, when the facility is acceptable and eighty percent (80%) of the lots in that phase have been improved, the County will take over the maintenance and operations of the system. In the event that eighty percent (80%) of the lots in a residential development have not been improved by the end of the two year maintenance period, the maintenance bond may be extended, subject to the approval of the Director, for one (1) additional year.

The amount of the Maintenance Bond shall be ten percent (10%) of the estimated construction cost of the stormwater facilities and roads requiring maintenance, or five thousand dollars (\$5000.00), whichever is greater. The construction cost of the facilities requiring maintenance shall be estimated by the Project Engineer, subject to the approval of the Director.