

National Menu of Best Management Practices for Storm Water Phase II



Welcome to EPA's Storm Water Phase II Menu of Best Management Practices (BMPs). The menu is intended to provide guidance to regulated small MS4s as to the types of practices they could use to develop and implement their storm water management programs. The menu is intended as guidance only.

The [Storm Water Phase II rule](#) was published on December 8, 1999, and generally requires operators of small MS4s in urbanized areas to develop and implement a storm water management program which addresses six minimum control measures. A series of [fact sheets](#) describe the various components of the Phase II rule.

The information below provides guidance for regulated small MS4s developing a Phase II storm water program.

The storm water pollution problem has two main components: the increased volume and rate of runoff from impervious surfaces, and the concentration of pollutants in the runoff. Both components are directly related to development in urban and urbanizing areas. Together, these components cause changes in hydrology and water quality that result in a variety of problems, including habitat modification and loss, increased flooding, decreased aquatic biological diversity, and increased sedimentation and erosion. Effective management of stormwater runoff offers a multitude of possible benefits, including protection of wetlands and aquatic ecosystems, improved quality of receiving waterbodies, conservation of water resources, protection of public health, and flood control.

In addition to chemical pollutants in storm water, the physical aspects related to urban runoff, such as erosion and scour, can significantly affect a receiving water's fish population and associated habitat (EPA, 2000). Alterations in hydraulic characteristics of streams receiving runoff include higher peak flow rates, increased frequency and duration of bankfull and subbankfull flows, increased occurrences of downstream flooding, and reduced baseflow levels (EPA, 1999). Traditional flood control measures that rely on the detention (storage) of the peak flow (referred to as peak shaving) have been characteristic of many storm water management approaches, have generally not targeted pollutant reduction and in many cases have exacerbated the problems associated with changes in hydrology and hydraulics. EPA recommends an approach that integrates the control of storm water peak flows and the protection of natural channels to sustain the physical and chemical properties of aquatic habitat.

Minimum Measures and BMPs

The Phase II rule describes six minimum control measures which most regulated small MS4s will need to implement. EPA anticipates that these minimum control measures typically will be implemented by applying one or more BMPs appropriate to the source, location, and climate. The practices listed in the menu of BMPs have been found by EPA to be representative of the types of practices that can be applied successfully to achieve the minimum control measures.

EPA recognizes that there is often site-specific, regional, and national variability in the selection of appropriate BMPs, as well as in the design constraints and pollution control effectiveness of practices. The list of practices for each minimum control measure is not all-inclusive and does not preclude MS4s from using other technically sound practices. In all cases, however, the practice or set of practices chosen by the MS4 needs to achieve the minimum measure.

EPA recognizes as well that some MS4s may already be meeting the minimum measures, or that only one or two practices may need to be added to achieve the measures. Existing storm water management practices should be recognized and appropriate credit given to those who have already made progress toward protecting water quality. There is no need to spend additional resources for a practice that is already in existence and operational.

BMPs as Systems

Effective storm water management is often achieved from a management systems approach, as opposed to an approach that focuses on individual practices. That is, the pollutant control achievable from any given management system is viewed as the sum of the parts, taking into account the range of effectiveness associated with each single practice, the costs of each practice, and the resulting overall cost and effectiveness. Some individual practices may not be very effective alone but, in combination with others, may provide a key function in highly effective systems. The Phase II rule encourages such system-building by stating the minimum requirements in more general terms, which allows for the use of appropriate situation-specific sets of practices that will achieve the minimum measures.

Prevention vs. Treatment

Once pollutants are present in a water body, or after a receiving water body's physical structure and habitat have been altered, it is much more difficult and expensive to restore it to an undegraded condition. Therefore, the use of a management system that relies first on preventing degradation of receiving waters is recommended. BMPs under the each of the minimum measures—particularly the obvious category of pollution prevention, as well as outreach, education, and erosion and sediment control—focus on the prevention of pollutants from ever getting into storm water. Similarly, some of the practices under the post-construction runoff control minimum measure address site design issues that can result in pollution prevention.

The menu of BMPs is based on Phase II's six minimum control measures. Click on the minimum control measure below to see the Phase II requirements for that minimum measure and the BMPs which could be used to implement the measure.

1. [Public education and outreach on storm water impacts.](#)
2. [Public involvement/participation.](#)

3. **Illicit discharge detection and elimination.**
4. **Construction site storm water runoff control.**
5. **Post-construction storm water management in new development and redevelopment.**
6. **Pollution prevention/good housekeeping for municipal operations.**