

# **Chapter 2 - Post-Construction Stormwater Management in New Development and Redevelopment**

The Post-Construction Stormwater Management in New Development and Redevelopment SBR requires the Tier B Municipality to develop, implement, and enforce a program that addresses stormwater runoff from certain new development and redevelopment projects that discharge into the Tier B Municipality's MS4. Under this SBR, the Tier B Municipality must comply with a minimum standard that has several different but related requirements.

## **WHAT IS REQUIRED?**

### **Minimum Standard**

To prevent or minimize water quality impacts, the Tier B Municipality shall develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects (including projects operated by the municipality itself) that disturb one acre or more, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the municipality's small MS4. The municipality shall in its post-construction program:

- i. Adopt and reexamine a municipal stormwater management plan (or adopt amendments to an existing municipal stormwater management plan) in accordance with N.J.A.C. 7:8-4.
- ii. Adopt and implement a municipal stormwater control ordinance or ordinances in accordance with N.J.A.C. 7:8-4. The ordinance(s) will control stormwater from non-residential development and redevelopment projects.
- iii. Ensure that any residential development and redevelopment projects that are subject to the Residential Site Improvement Standards for stormwater management (N.J.A.C. 5:21-7) comply with those standards (including any exception, waiver, or special area standard that was approved under N.J.A.C. 5:21-3).
- iv. Where necessary to implement the municipal stormwater management plan, the municipal stormwater control ordinance(s) will also:
  - Control aspects of residential development and redevelopment projects that are not pre-empted by the Residential Site Improvement Standards; and
  - Set forth-special area standards approved by the Site Improvement Advisory Board for residential development or redevelopment projects under N.J.A.C. 5:21-3.5.
- v. Ensure adequate long-term operation and maintenance of BMPs.

- vi. Enforce, through the stormwater control ordinance(s) or a separate ordinance, compliance with standards set forth in Attachment A of the permit to control passage of solid and floatable materials through storm drain inlets.
- vii. This post-construction program shall also require compliance with the applicable design and performance standards established under N.J.A.C. 7:8 for major development, unless:
  - Those standards do not apply because of a variance or exemption granted under N.J.A.C. 7:8; or
  - Alternative standards are applicable under an areawide or Statewide Water Quality Management Plan adopted in accordance with N.J.A.C. 7:15.

### **Measurable Goal**

Tier B Municipalities shall certify annually that they have developed, implemented, and are actively enforcing a program to address stormwater runoff from new development and redevelopment projects that discharge into the Tier B Municipality's small MS4 in accordance with the minimum standard.

### **Implementation Schedule**

- i. Upon the effective date of permit authorization, Tier B Municipalities shall for new development and redevelopment projects:
  - Ensure that any residential development and redevelopment projects that are subject to the Residential Site Improvement Standards for stormwater management (N.J.A.C. 5:21-7) comply with those standards (including any exception, waiver, or special area standard that was approved under N.J.A.C. 5:21-3).
  - Ensure adequate long-term operation and maintenance of BMPs on property owned or operated by the municipality.
- ii. Within 12 months from the effective date of permit authorization, Tier B Municipalities shall:
  - Adopt a municipal stormwater management plan (or adopt amendments to an existing municipal stormwater management plan) pursuant to the Stormwater Management Rules (N.J.A.C. 7:8-4);
  - Comply with the standards set forth in Attachment A of the permit to control passage of solid and floatable materials through storm drain inlets for storm drain inlets the municipality installs within the Tier B Municipality's small MS4.
- iii. Within 12 months from the adoption of the municipal stormwater management plan, Tier B Municipalities shall adopt a stormwater control ordinance(s) to implement that plan, and shall submit the adopted municipal stormwater management plan and ordinance(s) to the appropriate county review agency for approval.
- iv. Tier B Municipalities shall enforce stormwater control ordinance(s) when approved in accordance with N.J.A.C. 7:8-4.
- v. Within 24 months from the effective date of permit authorization Tier B Municipalities shall:

- Ensure adequate long-term operation and maintenance of BMPs on property not owned or operated by the municipality;
- Enforce, through the stormwater control ordinance(s) or a separate ordinance compliance with the standards set forth in Attachment A of the permit to control passage of solid and floatable materials through storm drain inlets for storm drain inlets not installed by the Tier B Municipality.

### WHAT DOES THIS MEAN?

To prevent or minimize pollution of surface waters and groundwater by stormwater runoff from certain new development and redevelopment projects, Tier B Municipalities must develop, implement, and enforce a “post-construction program” to control post-construction stormwater runoff from these projects.



*Many projects that disturb one acre or more are subject to the New Development and Redevelopment Post-construction program.*

The projects addressed under this SBR are new development and redevelopment projects (including projects operated by the municipality itself) that:

1. disturb one acre or more (including projects less than one acre that are part of a larger common plan of development or sale); and
2. discharge stormwater into the municipality’s small MS4.

**(Note** - This SBR does not require Tier B Municipalities to control post-construction stormwater runoff from new development and redevelopment on public property, such as

county, State, or Federal property, that municipalities have no statutory authority to regulate.)

### For the purpose of this SBR the following terms are defined as:

**“Disturbance”** means the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation.

**“Impervious surface”** means a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water. Impervious surfaces include areas such as paved parking lots and concrete sidewalks.

**“Redevelopment”** refers to alterations that change the “footprint” of a site or building in such a way that results in the disturbance of one acre or more of land. The term is not intended to include such activities as exterior remodeling, which would not be expected to cause adverse stormwater quality impacts and offer no new opportunity for stormwater controls. The Department does not consider

pavement resurfacing projects that do not disturb the underlying or surrounding soil, remove surrounding vegetation, or increase the area of impervious surface to be “redevelopment projects.”

“Common plan of development or sale” means a contiguous area where multiple separate and distinct development or redevelopment activities have occurred, are occurring, or are proposed to occur under one plan. The “plan” in a “common plan of development or sale” is broadly defined as any announcement or piece of documentation (including, but not limited to, a sign, public notice or hearing, advertisement, drawing, permit application, zoning request) or physical demarcation (including, but not limited to, boundary signs, lot stakes, surveyor markings).

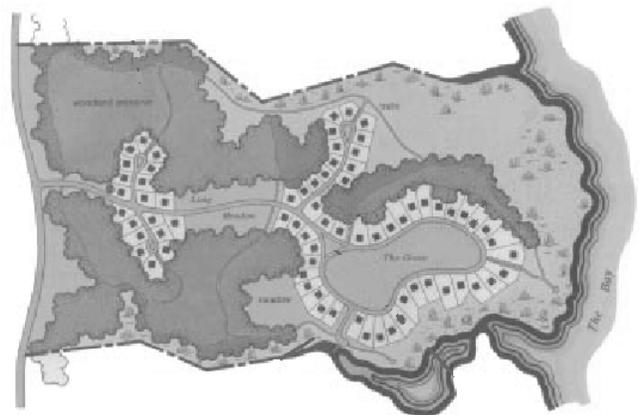
To develop, implement, and enforce this post-construction program, the Tier B Municipality must meet several different but related requirements. These requirements are concerned with:

- The Department’s **Stormwater Management rules (N.J.A.C. 7:8)**, which are implemented in part through the Residential Site Improvement Standards; govern the contents of municipal stormwater management plans and stormwater control ordinances; and establish stormwater management design and performance standards for new development and redevelopment
- The **Residential Site Improvement Standards (RSIS)** for stormwater management established by the New Jersey Department of Community Affairs (NJDCA) at N.J.A.C. 5:21
- **Municipal stormwater management plans and stormwater control ordinances** adopted under the Stormwater Management Act (N.J.S.A. 40:55D-93 to 99), which is a portion of the Municipal Land Use Law (N.J.S.A. 40:55D-1 et seq.)
- **Long-term operation and maintenance of BMPs**
- **Storm drain inlets**

### Overview of the Stormwater Management Rules

On February 2, 2004, the Department’s new Stormwater Management rules were published in the New Jersey Register and became effective (36 N.J.R. 670(a) and 781(a)). This is the first major update of these rules since their adoption in 1983, and includes fundamental changes in how systems and structures for managing stormwater runoff in New Jersey are planned, designed and implemented.

The new Stormwater Management rules provide a framework and incentives for managing runoff and resolving nonpoint source impairment on a drainage area basis for new development and redevelopment and existing developed areas, and establish a hierarchy for implementation of stormwater management measures with initial reliance on low impact site design techniques to maintain natural vegetation and drainage before incorporating structural BMPs. These new rules also establish new runoff control performance standards for groundwater recharge, water



*Low impact site design seeks to reduce and/or prevent adverse runoff impacts through sound site planning.*

quality and water quantity; establish special area protection measures (buffers) for pristine and exceptional value (“Category One”) waters; provide regulatory consistency among local and State regulatory agencies; and provide safety standards for stormwater management basins.

Municipal officials involved with land-use decisions, along with their consultants, need to become familiar with the new requirements in these rules; the guidance contained in the New Jersey Stormwater Best Management Practices Manual; and effective nonstructural stormwater management techniques, such as maintaining natural drainage paths and vegetation, and minimizing increases in impervious cover, that will preserve and protect water resources for the future.

A courtesy copy of these rules, answers to “**Frequently Asked Questions**,” and the **New Jersey Stormwater Best Management Practices Manual** are available at [www.njstormwater.org](http://www.njstormwater.org).

Questions or submissions regarding the **Stormwater Management rules** should be directed to the Division of Watershed Management, New Jersey Department of Environmental Protection, P.O. Box 418, Trenton, New Jersey 08625.

The new Stormwater Management rules have six subchapters as follows:

**Subchapter 1.** General Provisions

**Subchapter 2.** General Requirements for Stormwater Management Planning

**Subchapter 3.** Regional Stormwater Management Planning

**Subchapter 4.** Municipal Stormwater Management Planning

**Subchapter 5.** Design and Performance Standards for Stormwater Management Measures

**Subchapter 6.** Safety Standards for Stormwater Management Basins

Tier B Municipalities are directly affected by subchapters 1, 2, 4, 5, and 6 of these new rules, and may also be directly affected by subchapter 3 if a regional stormwater management planning area includes all or part of the municipality. Several provisions of subchapters 2, 4, and 5 are discussed further below.

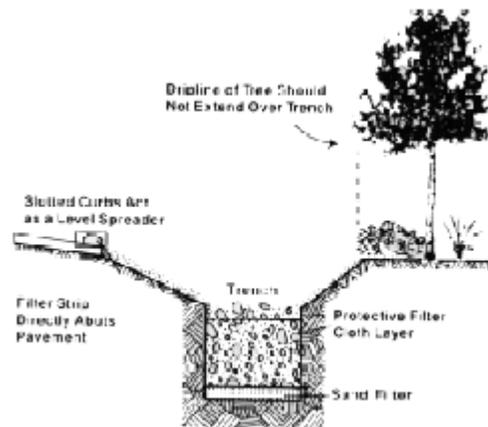
### **Major Development**

“Major development” is one of the most important terms in these new rules and this SBR. The design and performance standards in subchapter 5 apply to “major development” only, and each municipal stormwater management plan and stormwater control ordinance adopted under subchapter 4 must address stormwater-related water quality, groundwater recharge, and water quantity impacts of “major development.” For purposes of these plans and ordinances, the RSIS, and this SBR, “major development” is limited to development and redevelopment projects that ultimately disturb one or more acres of land.

(**Note:** Under N.J.A.C. 7:8-1.6 (“Applicability to Major Development”), major development which has received certain municipal approvals or Department permits prior to February 2, 2004 is **not** required to comply with the new Stormwater Management rules, but instead shall be subject to the stormwater management requirements in effect on February 1, 2004, copies of which are available from the Department’s Division of Watershed Management at the address specified above.)

## Design and Performance Standards for Major Development

This post-construction program shall require compliance with the applicable design and performance standards for major development established in N.J.A.C. 7:8, unless those standards do not apply because of a variance or exemption granted under N.J.A.C. 7:8, or unless alternative standards under a Water Quality Management (WQM) Plan (adopted in accordance with the Department's Water Quality Management Planning rules at N.J.A.C. 7:15) are applicable. Tier B Municipalities shall require such compliance through the RSIS, and through municipal stormwater management plans and stormwater control ordinances.



*N.J.A.C. 7:8-5.4 includes new standards to encourage and control infiltration and groundwater recharge.*

In the new Stormwater Management Rules, subchapter 5 establishes design and performance standards for “stormwater management measures” for “major development” intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies.

“Stormwater management measure” is defined in these rules as “any structural or nonstructural strategy, practice, technology, process, program, or other method intended to control or reduce stormwater runoff and associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal nonstormwater discharges into stormwater conveyances.”

The standards specified in subchapter 5 do not apply to major development if alternative design and performance standards that are at least as protective as would be achieved through subchapter 5 when considered on a regional stormwater management area basis are applicable under a regional stormwater management plan adopted in accordance with N.J.A.C. 7:8 or a WQM plan adopted in accordance with N.J.A.C. 7:15.

Subchapter 5 consists of the following sections:

7:8-5.1 Scope

7:8-5.2 Stormwater management measures for major development

7:8-5.3 Nonstructural stormwater management strategies

7:8-5.4 Erosion control, groundwater recharge and runoff quantity standards

7:8-5.5 Stormwater runoff quality standards

7:8-5.6 Calculation of stormwater runoff and groundwater recharge

7:8-5.7 Standards for structural stormwater management measures

7:8-5.8 Maintenance requirements

7:8-5.9 Sources for technical guidance

Some of the most important new design and performance standards in subchapter 5 include:

- The requirements in N.J.A.C. 7:8-5.2 and 5.3 to incorporate the following **nonstructural stormwater management strategies** into the design:
  - ❑ Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;
  - ❑ Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces;
  - ❑ Maximize the protection of natural drainage features and vegetation;
  - ❑ Minimize the decrease in the "time of concentration" from pre-construction to post-construction. "Time of Concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the drainage area to the point of interest within a watershed;
  - ❑ Minimize land disturbance including clearing and grading;
  - ❑ Minimize soil compaction;
  - ❑ Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;
  - ❑ Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas; and
  - ❑ Provide other source controls to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into stormwater runoff (see N.J.A.C. 7:8-5.3(a)9 and the New Jersey Stormwater Best Management Practices Manual for examples).
- The standard in N.J.A.C. 7:8-5.4 to encourage and control **infiltration and groundwater recharge**, including requirements that the design engineer (except in certain specified circumstances) either:
  - ❑ Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual pre-construction groundwater recharge volume for the site; **or**
  - ❑ Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the two-year storm is infiltrated.
- The standard in N.J.A.C. 7:8-5.4 to control **stormwater runoff quantity impacts**.
  - ❑ This standard provides the design engineer with various alternatives, such as, for example, designing stormwater management measures so that the post-construction peak runoff rates for the two, 10 and 100-year storm events are 50, 75 and 80 percent, respectively, of the pre-construction peak runoff rates.

- The “**Stormwater runoff quality standards**” in N.J.A.C. 7:8-5.5, including:
  - The requirement that stormwater management measures be designed to reduce the post-construction load of **total suspended solids** (TSS) in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed site, expressed as an annual average. Table 2 in N.J.A.C. 7:8-5.5 presents the presumed TSS removal rates for certain BMPs designed in accordance with the New Jersey Stormwater Best Management Practices Manual.
  - The requirement that stormwater management measures be designed to reduce, to the maximum extent feasible, the post-construction **nutrient** load of the anticipated load from the developed site in stormwater runoff generated from the water quality design storm.
  - The requirement that the applicant preserve and maintain **300-foot “special water resource protection areas”** along all waters designated “Category One” in the Department’s Surface Water Quality Standards at N.J.A.C. 7:9B, and along perennial or intermittent streams that drain into or upstream of the Category One waters as shown on the U.S. Geological Survey (USGS) Quadrangle Maps or in the County Soil Surveys, within the associated hydrologic unit code 14 (HUC14) drainage.
- The **maintenance requirements** in N.J.A.C. 7:8-5.8 (see the discussion below under “Maintenance Requirements in the New Stormwater Management Rules and in the Residential Site Improvement Standards”).



*Without “special water resource protection areas” development can occur along stream corridors contributing to the degradation of Category One waters.*

The requirement in the Tier B Permit for “compliance with the applicable design and performance standards established under N.J.A.C. 7:8” pertains to **all** applicable design and performance standards established under the Stormwater Management rules, not just to the “Stormwater runoff quality standards” in N.J.A.C. 7:8-5.5. Problems such as human-induced base-flow reduction (due to reduced recharge) and exacerbation of flooding and erosion also present water quality problems because they alter the chemical, physical, or biological integrity of the waters of the State, or otherwise contribute to water pollution.

Technical and maintenance guidance for stormwater management measures can be found in the New Jersey Stormwater Best Management Practices Manual and other documents listed in N.J.A.C 7:8-5.9.

### Training

The Department has provided and will continue to provide training to local officials on implementation of the new Stormwater Management rules. Training on the updated stormwater rule performance standards has occurred and will continue to occur by request from the Department directly and through the Rutgers Office of Continuing Education. Information on training opportunities will be made available on the Department's stormwater website at [www.njstormwater.org](http://www.njstormwater.org) and on the Rutgers Office of Continuing Education website at <http://aesop.rutgers.edu/~ocpe/>. Please call Rutgers at (732) 932-9271 and request that you be put on the mailing list to receive notice of upcoming training opportunities.

### Residential Site Improvement Standards

**Upon the effective date of permit authorization**, the Tier B Permit requires Tier B Municipalities to ensure that any residential development and redevelopment projects (including projects operated by the municipality itself) that are subject to the Residential Site Improvement Standards (RSIS) for stormwater management at N.J.A.C. 5:21-7 (and that disturb one acre or more as discussed above) comply with those standards (including any exception, waiver, or special area standard that was approved under N.J.A.C. 5:21-3).

The RSIS already require municipalities to ensure that any residential development and redevelopment projects that are subject to the RSIS comply with the RSIS. Many but not all aspects of residential development and redevelopment projects are subject to the RSIS. The general provisions of the RSIS, including scope and applicability, administration and enforcement, and violations, are set forth at N.J.A.C. 5:21-1. The RSIS and its Appendices, including an Appendix on Special Area Standards, are available at [www.nj.gov/dca/codes/nj-rsis/index.shtml](http://www.nj.gov/dca/codes/nj-rsis/index.shtml), and from the Department of Community Affairs Publications Unit, PO Box 802, 101 South Broad Street, Trenton, NJ 08625-0802 (\$10 check payable to: Treasurer, State of New Jersey).

The RSIS for stormwater management address general stormwater management system strategy; runoff estimation techniques; runoff collection system design; inlets, catch basins, manholes, and outlets; detention basins and other stormwater facilities, and water quality. The RSIS for stormwater management also reference the NJDEP Stormwater Management rules for the standards for stormwater management facilities. The NJDEP Stormwater Management Rules establish the NJDEP stormwater standards under the RSIS (see N.J.A.C. 7:8-1.5(c)). **Under the RSIS and those NJDEP rules, the new NJDEP Stormwater Management rules, including the new design and performance standards for major development in subchapter 5 of those rules (see discussion above), are to be implemented through the RSIS upon February 2, 2004** (the effective date of the new NJDEP Stormwater Management rules). Where conflict exists between the NJDEP stormwater requirements and the RSIS, the NJDEP standards control. See, *League of Mun. v. Commun. Affairs*, 310 N.J. Super. 224 (App. Div. 1998).

### Municipal Stormwater Management Plan and Stormwater Control Ordinance(s)

Under the Municipal Land Use Law (MLUL), a municipal stormwater management plan is an integral part of any master plan prepared by the municipality pursuant to the MLUL (specifically, it is part of the utility service plan element of the master plan). The municipal planning board has

authority under the MLUL to prepare and, after public hearing, adopt or amend all or part of a master plan. In the context of this SBR, the municipal stormwater management plan documents the strategy of a specific municipality to address the impacts of stormwater runoff from new development and redevelopment projects, and provides the structure and process for addressing such impacts.

A municipal stormwater control ordinance or ordinances is prepared under the MLUL to implement the municipal stormwater management plan. The governing body of the municipality has authority to adopt or amend a municipal stormwater control ordinance(s).

To assist municipalities in developing municipal stormwater management plans and stormwater control ordinances, the Department has prepared a **Sample Municipal Stormwater Management Plan and a Model Stormwater Control Ordinance**. In addition, Chapter 3 of the New Jersey Stormwater Best Management Practices Manual presents guidance on the development of municipal stormwater management plans (with a particular focus on mitigation plans, build-out analysis, and evaluation of the entire master plan and development regulations). The Department urges Tier B Municipalities to review this sample plan, model ordinance, and planning guidance before developing municipal stormwater management plans and municipal stormwater control ordinances.

The Sample Municipal Stormwater Management Plan has all of the required elements described in the new Stormwater Management rules. This sample plan also includes additional recommended elements to enable municipalities to better manage the impact of stormwater on the receiving waters of the State from new development and redevelopment and existing developed areas. The provisions in the Model Stormwater Control Ordinance are based on the required elements of a municipal stormwater management plan, and on standards set forth in Attachment A of the Tier B Permit to control passage of solid and floatable materials through storm drainage inlets.

**Important Note:** The **Sample Municipal Stormwater Management Plan** and the **Model Municipal Stormwater Control Ordinance for Municipalities** are located in Appendix C and Appendix D, respectively, of the amended New Jersey Stormwater Best Management Practices Manual (BMP Manual). A copy of the BMP manual can be found on the Department's Division of Stormwater Management website at <http://www.nj.gov/dep/watershedmgt/rules.htm> or at the Department's Stormwater website at <http://www.njstormwater.org>. The BMP manual is also on the CD of guidance material provided by the Department to all Tier B Municipalities and from Maps and Publications, Department of Environmental Protection, 428 East State Street, P.O. Box 420, Trenton, New Jersey, 08625; telephone (609) 777-1038.

### **General Requirements**

All stormwater management plans and stormwater control ordinances, including those adopted or amended by Tier B Municipalities to comply with the Tier B Permit, must comply with subchapter 2 ("General Requirements for Stormwater Management Planning") of the Department's new Stormwater Management rules. As applied to municipalities, these general requirements are discussed below.

- All municipal stormwater management plans and stormwater control ordinances shall be designed to achieve the following goals (set forth at N.J.A.C. 7:8-2.2):

- ❑ Reduce flood damage, including damage to life and property
  - ❑ Minimize, to the extent practical, any increase in stormwater runoff from any new development
  - ❑ Reduce soil erosion from any development or construction project
  - ❑ Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures
  - ❑ Maintain groundwater recharge
  - ❑ Prevent, to the greatest extent feasible, an increase in nonpoint pollution
  - ❑ Maintain the integrity of stream channels for their biological functions, as well as for drainage
  - ❑ Minimize pollutants in stormwater runoff from new and existing development in order to restore, enhance and maintain the chemical, physical, and biological integrity of the waters of the State, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water
  - ❑ Protect public safety through the proper design and operation of stormwater management basins
- A municipal stormwater management plan shall include structural and nonstructural stormwater management strategies necessary to meet the stormwater management goals of the new Stormwater Management rules (N.J.A.C. 7:8).
  - A municipal stormwater management plan shall comply with the requirements of subchapters 2 and 4 of the new Stormwater Management rules (N.J.A.C. 7:8-2 and -4). The requirements of subchapter 4 are discussed further below.
  - A municipal stormwater management plan shall incorporate the safety standards for stormwater management basins at subchapter 6 of the new Stormwater Management rules (N.J.A.C. 7:8-6).
  - In developing a stormwater management plan and identifying appropriate stormwater management measures under that plan, each municipality shall consider the physical characteristics and ecological resources of that municipality.
  - A municipal stormwater management plan and any municipality stormwater control ordinance shall be coordinated with any other stormwater management plans related to the same river basin or drainage area.

A municipality conducting stormwater management planning may petition the Department at the Division of Watershed Management address provided above for an exemption to the requirements of new Stormwater Management rules by submitting documentation to demonstrate that, if granted, the exemption will not result in an increase in flood damage, water pollution, including threats to the biological integrity, or constitute a threat to the public safety.

**Content of Municipal Stormwater Management Plans**

*Once a municipality's "municipal stormwater control ordinance" is effective, non-residential "major development" will be subject to the new Stormwater Management rules*

Within 12 months from the effective date of permit authorization, Tier B Municipalities must adopt a municipal stormwater management plan (or adopt amendments to an existing municipal stormwater management plan) "in accordance with N.J.A.C. 7:8-4."

N.J.A.C. 7:8-4 is subchapter 4 ("Municipal Stormwater Management Planning") of the Department's new Stormwater Management rules. The Tier B Municipality's new or amended municipal stormwater management plan must satisfy N.J.A.C. 7:8-4.2 ("Municipal stormwater management plan and elements"), the requirements of which are discussed below.

- A municipal stormwater management plan shall address stormwater-related water quality, groundwater recharge and water quantity impacts of "major development" (see discussion of that term above). The plan addresses such impacts by incorporating stormwater design and performance standards for such development. The plan may also address stormwater-related water quality, water quantity and groundwater recharge impacts of existing land uses, but addressing such impacts is outside the scope of this SBR.
- A municipal stormwater management plan (and stormwater control ordinance(s)) shall conform with applicable regional stormwater management plan(s).
  - For information about regional stormwater management planning under the Department's new Stormwater Management rules, see subchapter 3 of those rules, and Chapter 3 of the New Jersey Stormwater Best Management Practices Manual. Also see the discussion of "Reexamination and Amendment" below.
- A municipal stormwater management plan shall, at a minimum:
  1. Describe how the municipal stormwater management plan will achieve the goals set forth at N.J.A.C. 7:8-2.2 (see "General Requirements" above);
  2. Include maps showing water bodies based on Soil Surveys published by the U.S. Department of Agriculture; the U.S. Geological Survey Topographic Map, 7.5 minute quadrangle series; or other sources of information depicting water bodies in similar or greater detail;
  3. Map groundwater recharge areas and well head protection areas based on maps prepared by the Department under N.J.S.A. 58:11A-13 or a municipal ordinance;
  4. Describe how the municipal stormwater management plan incorporates design and performance standards in N.J.A.C.7:8-5 (discussed above) or alternative design and performance standards adopted as a part of a regional stormwater management plan or WQM plan;

5. Describe how adequate long-term operation as well as preventative and corrective maintenance (including replacement) of the selected stormwater management measures will be ensured;
  - ❑ Municipalities can ensure such operation and maintenance in a number of ways, and such maintenance is also closely related to N.J.A.C. 7:8-5.8, Maintenance requirements. See the discussion of “Long-term operation and maintenance of BMPs” below.
6. Describe how the plan will ensure compliance with Safety Standards for Stormwater Management Basins at N.J.A.C. 7:8-6;
7. Describe how the municipal stormwater management plan is coordinated with the appropriate Soil Conservation District and any other stormwater management plans, including any adopted regional stormwater management plan, prepared by any stormwater management planning agency related to the river basins or drainage areas to which the plans and/or ordinances apply;
8. **The following requirement is not operative until February 2, 2006.** Evaluate the extent to which the municipality’s entire master plan (including the land use plan element), official map and development regulations (including the zoning ordinance) implement principles expressed in the nonstructural stormwater management strategies set forth in N.J.A.C. 7:8-5.3(b). This evaluation shall also be included (with updating as appropriate) in the reexamination report adopted under N.J.S.A. 40:55D-89;
  - ❑ For specific guidance concerning this evaluation, see the Department’s Sample Municipal Stormwater Management Plan, and Chapters 2 and 3 and Appendix B of the New Jersey Stormwater Best Management Practices Manual.
9. The following requirement is not operative until February 2, 2006. Include a map of the municipality showing:
  - ❑ Projected land uses assuming full development under existing zoning, and
  - ❑ The HUC14 drainage areas as defined by the USGS; and an estimate, for each HUC14 drainage area, of the total acreage in the municipality of impervious surface and associated future nonpoint source pollutant load assuming full build out of the projected land uses;
  - ❑ For specific guidance concerning build-out analysis, see the Department’s Sample Municipal Stormwater Management Plan, and Chapter 3 of the New Jersey Stormwater Best Management Practices Manual.
10. At the option of the municipality, document that the municipality has a combined total of less than one square mile of vacant or agricultural lands rather than provide the information required in items 8 and 9 above. Agricultural lands may be excluded if the development rights to these lands have been permanently purchased or restricted by covenant, easement or deed. Vacant or agricultural lands in environmentally constrained areas may be excluded if the documentation also includes an overlay map of these areas.
  - ❑ Documentation shall include an existing land use map at an appropriate scale to display the land uses of each parcel within the municipality. Such a map shall display the following land uses: residential (which may be divided into single family, two-to-

four family, and other multi-family), commercial, industrial, agricultural, parkland, other public uses, semipublic uses, and vacant land;

11. In order to grant a variance or exemption from the design and performance standards in N.J.A.C. 7:8-5, include a mitigation plan that identifies what measures are necessary to offset the deficit created by granting the variance or exemption. The mitigation plan shall ensure that mitigation is completed within the drainage area and for the performance standard for which the variance or exemption was granted;
  - For specific guidance concerning the mitigation plan, see the Department’s Sample Municipal Stormwater Management Plan, and Chapter 3 of the New Jersey Stormwater Best Management Practices Manual.
12. Include a copy of the recommended implementing stormwater control ordinance(s) requiring stormwater management measures; and
13. The municipal stormwater management plan may also include a stream corridor protection plan to address protection of areas adjacent to water bodies. For water bodies subject to N.J.A.C. 7:8-5.5(h) (“Category One” waters and certain streams that drain into or are upstream of those waters), the plan shall provide, at a minimum, protections equivalent to those provided at N.J.A.C. 7:8-5.5(h) and be approved by the Department.

### Additional Mapping Guidance

Mapping required for a municipal stormwater management plan is not unduly complex, but availability of Geographical Information System (GIS) software will ease compliance. Information in GIS format is available from the Department on its website at: [www.nj.gov/dep/gis](http://www.nj.gov/dep/gis). A link to a free version of the GIS software ArcExplorer is also available on this website.

Mapped HUC14 subwatersheds for all municipalities are available on the Department website at [www.state.nj.us/dep/gis/digidownload/metadata/statewide/dephuc14.htm](http://www.state.nj.us/dep/gis/digidownload/metadata/statewide/dephuc14.htm).

Information on well head protection areas and aquifer recharge areas is available at:

<http://www.state.nj.us/dep/njgs/geodata/dgs02-2.htm>; and

<http://www.state.nj.us/dep/njgs/enviroed/aqfrchrg.htm>.

Many local watershed associations and environmental commissions have GIS and can help create maps for municipal stormwater management plans. The Rutgers University Center for Remote Sensing and Spatial Analysis can also assist in preparing these maps. Detailed direction on how to create maps is provided at <http://rwqp.rutgers.edu/univ/nj/>.

### Municipal Stormwater Control Ordinance(s)

**Within 12 months after the adoption of the municipal stormwater management plan,** Tier B Municipalities must adopt a municipal stormwater control ordinance(s) in accordance with N.J.A.C. 7:8-4 in order to implement that plan.

- The municipal stormwater control ordinance(s) will control stormwater from **non-residential** development and redevelopment projects (including projects operated by the municipality itself). Many aspects of **residential** development and redevelopment projects are subject to the RSIS. While these aspects are not controlled through the municipal stormwater control ordinance(s) (except for any special area standards set forth in that ordinance), the municipality is responsible

as discussed above for ensuring compliance with the RSIS, including the new NJDEP Stormwater Management rules referenced in the RSIS.

- Where necessary to implement the municipal stormwater management plan, the municipal stormwater control ordinance(s) will also:
  - Control aspects of residential development and redevelopment projects (including projects operated by the municipality itself) that are not pre-empted by the RSIS (for example, requirements for preservation of existing natural resources, requirements concerning development intensity or off-tract improvements, or requirements conforming to the Pinelands Comprehensive Management Plan); and
  - Set forth special area standards for stormwater management approved by the Site Improvement Advisory Board for residential development or redevelopment projects under the RSIS at N.J.A.C. 5:21-3.5. A special area designation may be applied by ordinance by a municipality or group of municipalities to an area or areas of a municipality or municipalities exhibiting or planned to exhibit a distinctive character or environmental feature that the municipality or municipalities by ordinance have identified and expressed a desire to preserve and enhance. One example of a special area is an area where environmental systems such as watersheds may require special environmental controls.
- Either the municipal stormwater control ordinance(s) or a separate municipal ordinance must require compliance with the standard set forth in Attachment A of the Tier B Permit to control passage of solid and floatable materials through storm drain inlets. The Department recommends use of the municipal stormwater control ordinance(s) for this purpose.
  - For further information about this standard, see the discussion under “Storm Drain Inlets” below.

### **Approval of Municipal Stormwater Management Plan and Ordinance(s)**

Tier B Municipalities shall enforce municipal stormwater control ordinance(s) when approved in accordance with N.J.A.C. 7:8-4. The approval process for the adopted plan and ordinance is addressed by N.J.A.C. 7:8-4.3 and 4.4. **Within 12 months after the adoption of the municipal stormwater management plan, Tier B Municipalities shall submit the adopted plan and the adopted municipal stormwater control ordinance(s) to the appropriate county review agency for approval.** The adopted plan and ordinance(s) shall not take effect without approval by the county review agency.

**“County review agency”** means an agency designated by the County Board of Chosen Freeholders to review municipal stormwater management plans and implementing ordinance(s). The county review agency may either be:

1. A county planning agency; or
2. A county water resources association created under the Flood Hazard Area Control Act at N.J.S.A. 58:16A-55.5, if the ordinance or resolution delegates to that association authority to approve, conditionally approve, or disapprove municipal stormwater management plans and implementing ordinances.

The Tier B Municipality shall also submit a copy of the adopted municipal stormwater management plan and the adopted municipal stormwater control ordinance(s) to the Department's Division of Watershed Management at the address specified above.

In reviewing the adopted plan and ordinance(s), the county review agency shall consider whether the plan and ordinance(s) conform with the requirements of the Department's new Stormwater Management rules.

In accordance with the Stormwater Management Act at N.J.S.A. 40:55D-97, it is the county review agency's responsibility to review and approve, conditionally approve (specifying the necessary amendments to the plan and ordinance(s)) or disapprove the adopted plan and ordinance(s) within 60 calendar days of receipt of the plan and ordinance(s). If the county review agency does not approve, conditionally approve, or disapprove the plan or ordinance(s) within 60 calendar days, the plan and ordinance(s) shall be deemed approved by that agency. The county review agency shall issue a written decision to the municipality, with a copy to the Department.

A municipal stormwater management plan and stormwater control ordinance(s) approved by the county review agency shall take effect immediately. A municipal plan and ordinance(s) conditionally approved by the county review agency shall take effect upon adoption by the municipality of the amendments specified by the county review agency.

Within 30 days of the effective date of the municipal stormwater management plan and municipal stormwater control ordinance(s), the municipality shall either:

1. Place the plan and ordinance(s) on its website and notify the Department, the Soil Conservation District and State Soil Conservation Committee, or:
2. Submit a copy of the approved plan and ordinance(s) to the Department; provide notice of such approval to the Soil Conservation District and the State Soil Conservation Committee; and, upon request, submit a copy of the approved plan and ordinance(s) to the District and/or Committee.

In accordance with N.J.A.C. 7:8-4.5, the Department reserves the right to review stormwater management plans and stormwater control ordinances for compliance with the Department's new Stormwater Management rules and make recommendations to correct any deficiencies. In addition, if a Tier B Municipality does not comply with the Tier B Permit conditions requiring it to adopt a municipal stormwater management plan and stormwater control ordinance in accordance with N.J.A.C. 7:8-4, that municipality is subject to enforcement action.

### **Additional Municipal/County Coordination**

- The Department **strongly encourages** Tier B Municipalities and county review agencies to communicate with each other throughout the development of municipal stormwater management plans and municipal stormwater control ordinances. This may reduce the risk that the county review agency will disapprove, or require amendments to, the adopted plan and ordinance(s).
- As required by the County Planning Act at N.J.S.A. 40:27-4 (also see N.J.S.A. 40:55D-13), the Tier B Municipality shall:

- ❑ Forward a copy of any **proposed** municipal stormwater management plan (or amendment to that plan) to the county planning board for review and report at least 20 days prior to the date of the public hearing held by the municipal planning board.
- ❑ Transmit, within 30 days after adoption, a copy of any **adopted** municipal stormwater management plan (or amendment to that plan) to the county planning board for its information and files (even if the county planning board is not the “county review agency”).
- As required by the Municipal Land Use Law at N.J.S.A. 40:55D-15.b and -16, the Tier B Municipality shall:
  - ❑ Provide a copy of any proposed municipal stormwater control ordinance (or amendment to that ordinance) to the county planning board at least 10 days prior to the date of the public hearing held by the municipal governing body.
  - ❑ File a copy of any adopted municipal stormwater control ordinance (or amendment to that ordinance) with the county planning board (even if the county planning board is not the “county review agency”).

### Reexamination and Amendment

The Tier B Permit requires Tier B Municipalities to reexamine municipal stormwater management plans in accordance with N.J.A.C. 7:8-4. Under N.J.A.C. 7:8-4.3, the municipality must reexamine the municipal stormwater management plan at each reexamination of the municipality’s master plan in accordance with the Municipal Land Use Law at N.J.S.A. 40:55D-89.

In addition, N.J.A.C. 7:8-4.3 requires the municipality to amend the municipal stormwater management plan and municipal stormwater control ordinance(s) as necessary, to submit the amended plan and amended ordinance(s) to the county review agency for approval. N.J.A.C. 7:8-4.3 also provides more specifically that within one year of the adoption of a regional stormwater management plan as an amendment to the Areawide Water Quality Management Plan, or an amendment thereto, each municipality within the regional stormwater management planning area shall amend their respective municipal stormwater management plans (and stormwater control ordinance(s)) to implement the regional stormwater management plan.

### Variance or Exemption from Design and Performance Standards

Under N.J.A.C. 7:8-4.6, a Tier B Municipality may grant a variance or exemption from the design and performance standards for stormwater management measures set forth in its approved municipal stormwater management plan and stormwater control ordinance(s), provided:

- The municipal stormwater management plan includes a **mitigation plan** in accordance with N.J.A.C. 7:8-4.2(c)11 (see item 11 under “Content of Municipal Stormwater Management Plans” above); and
- The municipality submits a written report to the county review agency and the Department describing the variance or exemption and the required mitigation.

### Operation and Maintenance of BMPs



*Without long-term operation and maintenance, many structural BMPs, like this constructed wet pond, fail.*

As a part of the post-construction program, the Tier B Municipality must ensure adequate long-term operation and maintenance of BMPs. This means that for any BMP that is installed in order to comply with the requirements of the post-construction program (including a BMP installed by the municipality itself), the Tier B Municipality must ensure adequate long-term operation as well as preventative and corrective maintenance (including replacement).

As noted above under “Content of Municipal Stormwater Management Plans,” those plans must describe how adequate long-term operation as well as preventative and corrective maintenance (including replacement) of the selected stormwater management measures will be ensured.

This requirement can be met in a number of ways, for example:

- Requiring the property or easement to be dedicated to the municipality (with the municipality performing the operation and maintenance).
- Making arrangements with counties or other governmental entities to perform the operation and maintenance.
- Adopting and enforcing in the municipal stormwater control ordinance(s) a provision that requires the private entity, such as a homeowners’ association, to perform the operation and maintenance, with penalties if the private entity does not comply. If, for example, the private entity does not perform the required maintenance, the municipality can perform the maintenance and charge the private entity.
  - See Section 9 (“Maintenance and Repair”) of the Department’s Model Stormwater Control Ordinance.

### **Maintenance Requirements - Stormwater Management Rules and RSIS**

As noted above under “Residential Site Improvement Standards (RSIS)” and “Content of Municipal Stormwater Management Plans,” the new design and performance standards for major development in subchapter 5 of the new Stormwater Management rules (or alternative design and performance standards adopted as a part of a regional stormwater management plan or WQM plan) are to be implemented through the RSIS, and must also be incorporated in municipal stormwater management plans that are to be implemented through municipal stormwater control ordinances.

Among the most important design and performance standards in N.J.A.C.7:8-5 are the maintenance requirements in N.J.A.C. 7:8-5.8, which are discussed below:

1. The design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major development.
2. The maintenance plan shall contain:

- Specific preventative maintenance tasks and schedules
- Cost estimates, including estimated cost of sediment, debris, or trash removal
- The name, address, and telephone number of the person or persons responsible for preventative and corrective maintenance (including replacement).

Maintenance guidelines for stormwater management measures are available in the New Jersey Stormwater Best Management Practices Manual (BMP Manual). If the maintenance plan identifies a person other than the developer (for example, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or of the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.

- N.J.A.C. 7:8-5.8 does not specifically assign the responsibility for maintenance of stormwater management measures to municipalities, homeowners, or homeowner's associations. Instead, the rule simply requires that the entity responsible for maintenance be specified. The decision whether and to whom a developer assigns responsibility is a site-specific one based on the particular facts and circumstances involved. A municipality may choose to assume responsibility for maintenance, but it is not obligated to do so under this rule. The applicant is responsible for indicating the person or entity responsible for maintenance.

The rule generally prohibits the transfer of maintenance responsibilities to a single individual property owner (see **(3)** below). However, the maintenance responsibility can be transferred to a homeowners' association. The selection of BMPs, and the maintenance needs associated with the BMPs, should take into account the ability of the future users to maintain the proposed stormwater facility. Guidance on the maintenance of specific BMPs is provided in the BMP Manual.

3. Responsibility for maintenance shall not be assigned or transferred to the owner or tenant of an individual property in a residential development or project, unless such owner or tenant owns or leases the entire residential development or project.

- This provision allows individuals to maintain nonstructural stormwater management strategies that are on their individual lots, provided that the municipality will ensure the maintenance of the on-lot stormwater management measures.



*Guidance on the maintenance of specific BMPs is provided in the NJ Stormwater BMP Manual.*

4. If the person responsible for maintenance identified under **(2)** above is not a public agency, the maintenance plan and any future revisions based on **(8)** below shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.
5. Preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure, including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of nonvegetated linings.
6. The person responsible for maintenance identified under **(2)** above shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

- The maintenance plan and any revisions, as well as the maintenance record, must be maintained for the life of the stormwater management measures on the site. Maintenance logs for the most recent three years, as well as the maintenance plan and any revisions should remain available for review by public entities with jurisdiction over the activities on the site. If members of the public wish to review the maintenance plan or record, they should contact a public entity or the municipal engineer.

The Department is not requiring a specific format for the maintenance plan or the maintenance logs. Sample maintenance forms are available in the NJDEP Division of Water Resources “Ocean County Demonstration Study Stormwater Facilities Maintenance Manual,” dated June 1989, and updated samples may be available in the future.

7. The person responsible for maintenance identified under **(2)** above shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.
  - The Department recognizes that maintenance for each major development will vary depending on the stormwater management measures implemented within the development, and has provided guidance for maintenance measures in the BMP Manual, including the type and frequency of maintenance. The effective implementation of the maintenance is based on the implementation of the approved maintenance plan. The frequency of maintenance is to be documented on maintenance logs that are required for the stormwater management measures under **(6)** above.
8. The person responsible for maintenance identified under **(2)** above shall retain and make available, upon request by any public entity with administrative, health, environmental or safety authority over the site, the maintenance plan and the documentation required by **(6)** and **(7)** above.
9. Nothing in N.J.A.C. 7:8-5.8 shall preclude the municipality in which the major development is located from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53.

The need for a maintenance plan, and implementation of that plan, cannot be overemphasized. The lack of maintenance is one of the major reasons for the failure of structural BMPs to provide the level of treatment for which they were designed. Basic maintenance procedures are contained in the

BMP Manual. Unique or innovative maintenance procedures for those measures that are not specified in the BMP Manual may be used subject to approval by the municipality.

The RSIS also set forth maintenance requirements at N.J.A.C. 5:21-7.5(f)7 as follows:

“7. Stormwater management facilities shall be regularly maintained to insure they function at design capacity, and to prevent health hazards associated with debris buildup and stagnant water.

“i. Maintenance and upkeep responsibility depend on ownership of the facilities. If the drains, basins, and/or other features of the stormwater system in the residential development are part of a public drainage system, then the municipality or an appropriate public entity is responsible for maintenance and upkeep. If part or all of the residential stormwater management system is privately owned, then the privately owned portion of the system must be privately maintained, unless the municipality or other appropriate public agency agrees to assume responsibility for the facilities. The terms of the agreement shall be in a form satisfactory to the municipal attorney and may include, but are not limited to, maintenance easements, personal guarantees, deed restrictions, covenants, and bonds.

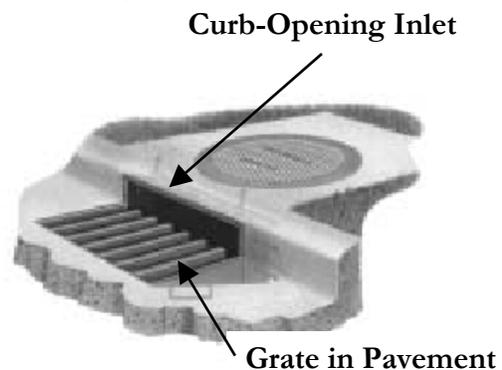
“ii. In cases where there is common ownership of property that is not part of a publicly owned drainage system, a homeowner's association or similar permanent entity may be established as the agent responsible for upkeep, absent an agreement with the municipality or other appropriate public entity.”

Where conflict exists between the NJDEP stormwater requirements and the RSIS, the NJDEP standards control.

### **Storm Drain Inlets (New Development and Redevelopment)**

For new development and redevelopment projects (public or private) subject to this SBR, Tier B Municipalities must enforce, through the municipal stormwater control ordinance(s) or a separate ordinance, compliance with the design standard in Attachment A of the Tier B Permit to control passage of solid and floatable materials through storm drain inlets. The Department recommends use of the municipal stormwater control ordinance(s) for this purpose (see Section 3.E.3 of the Department's Model Stormwater Control Ordinance).

There are separate design standards for grates in pavement or other ground surfaces, and for curb-opening inlets. Each standard is described below. These standards help prevent certain solids and floatables (e.g., cans, plastic bottles, wrappers, and other litter) from reaching the surface waters of the State.

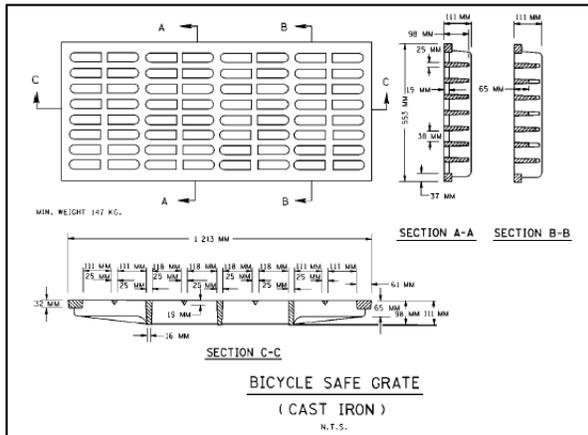


### **Grates in Pavement or other Ground Surfaces**

The standard applies to grates that are used in pavement or another ground surface to collect stormwater into a storm drain or surface water body under the grate.

- Examples of storm drain inlet grates subject to this standard include grates in grate inlets, the grate portion (non-curb-opening portion) of combination inlets, grates on storm sewer manholes, ditch grates, trench grates, and grates of spacer bars in slotted drains. Examples of ground surfaces include surfaces of roads (including bridges), driveways, parking areas, bikeways, plazas, sidewalks, lawns, fields, open channels, and stormwater basin floors.

**NJDOT “Bicycle Safe” Grate**



Source: Standard Roadway Construction Details, NJDOT

Many grate designs meet the standard. The first option (especially for storm drain inlets along roads) is simply to use the New Jersey Department of Transportation (NJDOT) bicycle safe grate. This grate is described in Chapter 2.4 of the NJDOT Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines, which is available at:

[http://www.state.nj.us/transportation/publicat/bike\\_guidelines.htm](http://www.state.nj.us/transportation/publicat/bike_guidelines.htm).

The other option is to use a different grate, as long as each “clear space” in the grate (each individual opening) is:

- No bigger than seven (7.0) square inches; or
- No bigger than 0.5 inches (1/2 inch) across the smallest dimension (length or width).

**Curb-Opening Inlets (Including Curb-Opening Inlets in Combination Inlets)**

If the storm drain inlet has a curb opening, the clear space in that curb opening (or each individual clear space, if the curb opening has two or more clear spaces) must be:

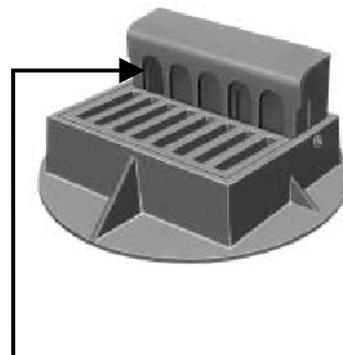
- No bigger than two (2.0) inches across the smallest dimension (length or width) - many curb-opening inlets installed in recent years meet this criterion; or
- No bigger than seven (7.0) square inches

**Option 1 (Example)**



*A curb-opening with a “clear space” no bigger than 2” across the smallest dimension*

**Option 2 (Example)**



*Each individual hole (“clear space”) in the curb-opening is no bigger than 7 square inches*

## Exemptions

The requirements of this standard do not apply whenever any of the following exemptions listed in Attachment A are applicable:

- A “Hydraulic Performance Exemption” where the Tier B Municipality or other review agency (for example, a county) determines that this standard would cause inadequate hydraulic performance that could not practicably be overcome by using additional or larger storm drain inlets that meet this standard.
- Either of two “Alternative Device Exemptions”:
  - The first of these exemptions is where flows from the “water quality design storm” as specified in N.J.A.C. 7:8 are conveyed through any device or combination of devices (e.g., end of pipe netting facility, manufactured treatment device, or a catch basin hood) that is designed, at a minimum, to prevent the passage of all solid and floatable materials that could not fit through one of the following:
    1. A rectangular space that is four and five-eighths ( $4\frac{5}{8}$ ) inches long and one and one-half ( $1\frac{1}{2}$ ) inches wide (this option does not apply for outfall netting facilities); or
    2. A bar screen that has a  $\frac{1}{2}$  inch (0.5 inches) opening between each bar.
  - The second of these exemptions is where flows are conveyed through a trash rack that has parallel bars with one-inch (1.0 inch) spacing between the bars, to the elevation of the “water quality design storm” as specified in N.J.A.C. 7:8.

One of the requirements in the new Stormwater Management rules at N.J.A.C. 7:8-5.7(a)2 is that “trash racks shall be installed at the intake to the outlet structure as appropriate, and shall have parallel bars with one-inch spacing between the bars to the elevation of the water quality design storm” [emphasis added]. **This second “Alternative Device Exemption” will therefore be applicable to many new development and redevelopment projects.**

In the new Stormwater Management Rules, the “water quality design storm” is specified at N.J.A.C. 7:8-5.5(a).

- A “Historic Places Exemption” where the Department determines, pursuant to the New Jersey Register of Historic Places Rules at N.J.A.C. 7:4-7.2(c), that action to meet this standard is an undertaking that constitutes an encroachment or will damage or destroy the New Jersey Register listed historic property.

## WANT TO KNOW MORE?

Stormwater runoff from lands modified by urbanization can harm surface water and groundwater resources by changing natural hydrologic patterns, accelerating stream flows, destroying aquatic habitat, and elevating pollutant concentrations and loadings. These adverse environmental impacts can be more effectively prevented or minimized for new development and redevelopment projects (as required in this SBR) than for existing developed areas.

For a brief description of the hydrologic cycle and how development affects the cycle, see the “Stormwater Discussion” in the Department’s Sample Municipal Stormwater Management Plan. For more detailed description of the adverse impacts that unmanaged land development can have on

groundwater recharge and stormwater runoff quality and quantity both at and downstream of a development site, see Chapter 1, “Impacts of Development on Runoff,” of the New Jersey Stormwater Best Management Practices Manual. That Chapter also reviews the fundamental physical, chemical, and biological aspects of the rainfall-runoff process and how they can be altered by development. In doing so, that Chapter demonstrates the need for the new Stormwater Management Rules at N.J.A.C. 7:8, which have been developed to directly address these adverse impacts. In addition, that Chapter seeks to increase understanding of these physical, chemical, and biological processes in order to improve the design of structural and non-structural measures mandated by the Rules’ groundwater recharge, stormwater quality, and stormwater quantity requirements.

In regard to the design of storm drain inlets, every piece of solid or floatable material that is caught before it enters or leaves a storm drainage system will benefit the environment. Minimizing the size of spaces in storm drain inlet grates and curb openings will trap certain solid and floatable materials before they reach our waterways. However, these spaces must also be large enough to provide adequate hydraulic performance.

Several resources providing information related to this SBR were identified in the pages above. For convenience, some of these resources are also listed below:

- A courtesy copy of the new Stormwater Management Rules (N.J.A.C. 7:8), and answers to “Frequently Asked Questions” about those rules, are available at [www.njstormwater.org](http://www.njstormwater.org).
- The New Jersey Stormwater Best Management Practices Manual, including the Department’s Sample Municipal Stormwater Management Plan and Model Stormwater Control Ordinance, is available at [www.njstormwater.org](http://www.njstormwater.org) and from Maps and Publications, Department of Environmental Protection, 428 East State Street, P.O. Box 420, Trenton, New Jersey, 08625; telephone (609) 777-1038.
- The Residential Site Improvement Standards (N.J.A.C. 5:2) and its Appendices, including an Appendix on Special Area Standards, are available at [www.nj.gov/dca/codes/nj-rsis/index.shtml](http://www.nj.gov/dca/codes/nj-rsis/index.shtml), and from the Department of Community Affairs Publications Unit, PO Box 802, 101 South Broad Street, Trenton, NJ 08625-0802 (\$10 check payable to: Treasurer, State of New Jersey).