4. STORMWATER POLLUTANT REMOVAL CRITERIA

This chapter presents the criteria and methodologies necessary to determine the pollutant removal rates of stormwater management measures used individually and in series to meet the stormwater runoff quality requirements of the Stormwater Management rules at N.J.A.C. 7:8 (the "rules"). According to these rules, stormwater runoff quality standards are applicable when a major development results in an increase of one-quarter acre or more of regulated motor vehicle surface or the reconstruction of one-quarter acre or more of motor vehicle surface.

Stormwater Runoff Quality Standards at N.J.A.C. 7:8-5.5

The stormwater runoff quality standards at N.J.A.C. 7:8-5.5 are applicable when the major development results in an increase of one-quarter acre or more of regulated motor vehicle surface or the reconstruction of one-quarter acre or more of motor vehicle surface. Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm from all new and reconstructed motor vehicle surface.

Before any of the standards can be discussed, it is necessary to include a brief glossary of the terms defined in the rules that are relevant to the stormwater runoff quality standards.

"Motor vehicle surface" means *any pervious or impervious surface that is intended to be used by "motor vehicles" and/or aircraft, and is directly exposed to precipitation including, but not limited to, driveways, parking areas, parking garages, roads, racetracks and runways.*

For a better understanding of the definition, Table 4-1, provided on the following page, lists a number of scenarios and whether or not the surfaces identified in each particular situation would be considered a motor vehicle surface.

Table 4-1:

Scenario	Is this a motor vehicle surface?
An outdoor surface parking lot comprised of gravel, grass paver blocks and/or turf grass where motor vehicles will drive or park	Yes
An outdoor parking lot comprised of pervious asphalt pavement	Yes
Landscaped areas in an outdoor parking area where no motor vehicles will drive or travel upon	No
An open grass lawn reserved for use as an overflow parking area	Yes
An outdoor parking lot where parking spaces are covered by a shade structure, such as a cantilever shade or canopy	Yes
Parking surface inside a three-level parking garage	No
Parking surface on the roof of a three-level parking garage	Yes
Underground garages that are enclosed by walls	No
A building roof as a parking area for motor vehicles	Yes
An access road that is gated and accessible to motor vehicles only in an emergency	No
Grass areas in a golf course that are only intended to be used by golf carts, grass mowers and pedestrians	No
Paved or gravel areas in a golf course that will be used by maintenance trucks	Yes
Artificial turf fields that are not intended to be used by motor vehicles	No
Tennis courts with synthetic surfaces that are not intended to be used by motor vehicles	No
Walkways along the driveways in a proposed development	No

"Reconstruction" *means the replacement, rebuilding, or restoration of a lawfully existing structure*. In the context of other terms and conditions in the rules, reconstruction can be further clarified as follows:

- The rules exclude milling, repaving, or resurfacing of existing pavement from the definition of disturbance. Accordingly, milling, repaving, or resurfacing existing pavement as maintenance for an existing development will not constitute reconstruction.
- Any work that extends beyond milling, repaving or resurfacing is reconstruction of a motor vehicle surface.

Below is a hypothetical redevelopment site to illustrate different scenarios of reconstruction of a motor vehicle surface.

A 5-acre redevelopment site consists of 1 acre of woods and grass, 2 acres of non-motor vehicle impervious surface, including buildings and sidewalks, and 2 acres of parking area. Different redevelopment scenarios in Table 4-2 illustrate that different redevelopment proposals may result in different scopes of applicability of the stormwater runoff quality standards.

Table 4-2:

Scenario	Whether the stormwater runoff quality standards are applicable
The proposed redevelopment will replace the existing buildings and sidewalk with a 2-acre warehouse, rebuild the 2-acre parking area at the same location and leave the wooded and grass area undisturbed.	The project will result in reconstruction of 2 acres of motor vehicle surface and is subject to the stormwater runoff quality standards.
The proposed redevelopment will replace the buildings and sidewalk with a 1.5-acre warehouse, rebuild the 2-acre parking area and increase the wooded and grass area from 1 acre to 1.5 acres.	The project will result in reconstruction of 2 acres of motor vehicle surface and is subject to stormwater runoff quality standards.
The proposed redevelopment will replace the buildings and sidewalk with a 2.5-acre warehouse, replace the existing 2-acre parking area with a 1.5-acre parking area and the wooded and grass area will remain at 1 acre.	The project will result in reconstruction of 1.5 acres of motor vehicle surface. As a result, the 1.5-acre motor vehicle surface is subject to stormwater runoff quality standards.
The proposed redevelopment will replace the buildings and sidewalk with a 1-acre warehouse, replace the existing 2-acre parking area with a 2.5-acre parking area and increase the wooded and grass area from 1 acre to 1.5 acres.	The project will result in an increase of 0.5 acres of regulated motor vehicle surface and a reconstruction of 2 acres of motor vehicle surface. As a result, 2.5 acres of motor vehicle surface are subject to stormwater runoff quality standards.
The proposed redevelopment will replace the buildings and sidewalk with a 2-acre warehouse, resurface the top asphalt of the existing 2-acre parking area and the wooded and grass area will remain at 1 acre.	Resurfacing the existing 2-acre parking area is not considered reconstruction of motor vehicle surface. Therefore, the 2-acre parking area is not subject to stormwater runoff quality standards.

"Regulated motor vehicle surface" means any of the following, alone or in combination:

1. A net increase in motor vehicle surface; and/or

2. The total area of motor vehicle surface that is currently receiving stormwater runoff quality treatment either by vegetation or soil, by an existing stormwater management measure or by

treatment at a wastewater treatment plant, where the stormwater runoff quality treatment will be modified or removed.

As set forth at N.J.A.C. 7:8-5.5(b)3, if the surface is considered regulated motor vehicle surface because the water quality treatment for an area of motor vehicle surface that is currently receiving water quality treatment either by vegetation or soil, by an existing stormwater management measure, or by treatment at a wastewater treatment plant is to be modified or removed, the project shall maintain or increase the existing TSS removal of the anticipated load expressed as an annual average, unless N.J.A.C. 7:8-5.5(b)1 or N.J.A.C. 7:8-5.5(b)2 require a higher level of TSS removal. Examples of a hypothetical site to illustrate the requirement are provided below:

Scenario 1

A 1.5-acre site consists of 0.5 acres of meadow area, 0.5 acres of a building and 0.5 acres of parking area. The runoff from the parking area is currently discharged to the 0.5-acre meadow area before the runoff further drains to a nearby stream, which is not a Category One Water. The length of the meadow is 50 feet. The parking lot runoff will flow through the 50 feet of meadow. Although the meadow provides some water quality treatment for the parking lot runoff, the percentage of TSS removal rate is not determined. The proposed redevelopment will demolish the existing 0.5-acre building and construct a 1.25-acre new building by removing 0.25 acre of meadow area. The existing parking lot will also be reconstructed and the runoff from the parking lot will continue to drain to remaining 0.25 acres of meadow. The length of the remaining meadow will be only 25 feet.

Since the proposed redevelopment will reduce the length of the meadow from 50 feet to 25 feet, the water quality treatment provided by the meadow area will be reduced. Under N.J.A.C. 7:8-5.5(b)3, if the surface is considered regulated motor vehicle surface because the water quality treatment for an area of motor vehicle surface that is currently receiving water quality treatment either by vegetation or soil, by an existing stormwater management measure, or by treatment at a wastewater treatment plant is to be modified or removed, the project shall maintain or increase the existing TSS removal of the anticipated load expressed as an annual average, unless a higher TSS removal rate is required under N.J.A.C. 7:8-5.5(b)1 or 2. The existing meadow area currently provides some water quality treatment but its TSS removal rate is undetermined. Therefore, the 80% or 95%TSS removal rate shall apply because the parking lot is to be reconstructed which will be subject to the 95% TSS removal rate under N.J.A.C. 7:8-5.5(b)1 or 80% TSS removal rate under N.J.A.C. 7:8-5.5(b)2.

Scenario 2

The runoff from a 1-acre area of a township's roadway is currently discharged into a 200-foot grass swale before the runoff is discharged to a nearby stream. The grass swale provides a 50% TSS removal rate. The location of the grass swale will be installed with a new sidewalk and curb. The proposed sidewalk curb will collect the roadway runoff into a catch basin and convey the roadway runoff through a storm sewer to the nearby stream.

Since the roadway runoff is currently treated by the grass swale, the proposed curb and the storm conveyance system will remove the water quality treatment. As such, the 1-acre roadway will be considered 1 acre of regulated motor vehicle surface. Pursuant to N.J.A.C. 7:8-5.5(b)3, projects that trigger the water quality requirement due modification or removal of existing water quality treatment must provide equivalent or greater treatment; however, this project is not subject to N.J.A.C. 7:8-5.5(b) 1

or 2 because the project does not result in an increase of one-quarter acre or more of regulated motor vehicle surface or the reconstruction of one-quarter acre or more of regulated motor vehicle surface. Since the existing level of treatment in this example is 50% TSS removal, the 1-acre regulated motor vehicle surface is subject to a 50% TSS removal rate.

Scenario 3

A site consists of 0.5 acres of building and 0.5 acres of parking area. The runoff from the parking area is currently discharged to a combined sewer system that is further connected to a sewage treatment plant that can remove TSS from the sewage flow up to 85%. The existing parking lot will not be reconstructed, but the runoff from the parking lot will be collected by a new storm catch basin and conveyed to the township's storm sewer system which discharges to a nearby stream without any water quality treatment.

Since the runoff from the existing parking lot is currently treated by a sewage treatment plan but will be redirected to the township's storm sewer system under the proposed redevelopment, the parking lot will be considered an increase of regulated impervious surface because the existing water quality treatment is removed. As a result, the parking lot needs to meet stormwater quality standards. Furthermore, the 85% TSS removal rate provided by the sewage treatment plant is higher than the 80% TSS removal rate required under N.J.A.C. 7:8-5.5(b)2. Therefore, a TSS removal rate of 85% shall apply to the runoff from the existing parking lot for the proposed redevelopment. However, it should be noted that in many cases, the water quality design storm will overflow from the combined sewer system before reaching the treatment plant. In such cases, the required TSS removal rate can be calculated based upon the flow that actually reaches the treatment plant, which can usually be determined with assistance from the municipality or sewerage authority that operates the combined sewer system.

TSS Removal Rates for Individual Best Management Practices (BMPs)

The stormwater management measures used to reduce the average annual TSS and nutrient loads must be green infrastructure BMPs in accordance with N.J.A.C. 7:8-5.3, unless a waiver or variance from N.J.A.C. 7:8-5.3 is obtained. To achieve the reduction requirements, BMPs must be designed to treat the runoff from the NJDEP Water Quality Design Storm (WQDS), which N.J.A.C. 7:8-5.5(d) defines as 1.25 inches of rainfall in 2 hours. Details of the WQDS are presented in *Chapter 5: Stormwater Management Quantity and Quality Standards and Computations*. Details of green infrastructure stormwater management measures, also known as GI Best Management Practices (GI BMPs), are presented in subchapters in *Chapters 9* and *10* of the BMP Manual.

A reduction of the TSS annual loading is to be achieved by conveying the site's stormwater runoff through one or more onsite BMPs that have the ability to remove a portion of the TSS load. To demonstrate compliance with this requirement, the NJDEP has adopted official TSS removal rates for each of the BMPs described in detail in the BMP Manual. When designed in accordance with the BMP Manual and the Stormwater Management rules, the BMPs listed in Tables 5-1, 5-2 and 5-3 of N.J.A.C. 7:8-5.2(f) shall be presumed to be capable of providing stormwater controls for the design and performance standards as outlined in the tables. More detailed information and conditions for the TSS removal rates are available in *Chapters 9*, *10* and *11* of the BMP Manual.

TSS Removal Rates for BMPs in Series

Multiple BMPs may be arranged in series to achieve an enhanced TSS removal rate; the arrangement is subject to the following design criteria:

1. Since different types of BMPs utilize different mechanisms to remove suspended solids and nutrients, combining BMPs utilizing the same removal mechanisms in series will not provide better water quality treatment. For example, two small-scale infiltration BMPs cannot be used in series to achieve an enhanced removal rate for TSS removal.

2. A Manufactured Treatment Device (MTD) cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for TSS removal.

3. BMPs and MTDs that infiltrate runoff into subsoil cannot be arranged in series because the WQDS infiltrated by the upstream BMP will not be treated again in the downstream BMP.

4. Manufactured treatment devices that achieve TSS removal primarily through hydraulic dynamic sedimentation should be placed at the upstream end of a treatment train.

5. The arrangement of BMPs from upstream to downstream shall follow the hierarchical order below:

   (a) Arrange the BMPs from upstream to downstream in ascending order of TSS removal rate. In this arrangement, the BMP with the lowest TSS removal rate would be located at the upstream end of the treatment train. Downstream BMPs should have progressively higher TSS removal rates.

   (b) If the TSS removal rates of BMPs are tied at (a) above, arrange the BMPs from upstream to downstream in ascending order of nutrient removal rate. Similar to a, the BMP with the lowest nutrient removal rate would be located at the upstream end of the treatment train in this arrangement. Downstream BMPs should have progressively higher nutrient removal rates.

   (c) If the nutrient removal rates of BMPs are tied at (b) above, arrange the BMPs from upstream to downstream by their relative ease of sediment and debris removal. In this arrangement, the BMP from which it is easiest to remove collected sediment and debris would be located at the upstream end of the treatment train. In downstream BMPs, it should be progressively more difficult to remove sediment and debris.

The total removal rate of the BMP treatment train is based on the removal rate of the subsequent BMPs applied to the fraction of the TSS load remaining after stormwater runoff has passed through the previous BMPs.

A simplified equation for the total TSS removal rate (R) for two BMPs in series is:

$$\mathrm{R} = A + B - \left[\frac{(A \; x \; B)}{100}\right] \qquad \textit{(Equation 4-1)}$$

Where:

R = Total TSS Removal Rate
A = TSS Removal Rate of the First or Upstream BMP
B = TSS Removal Rate of the Second or Downstream BMP

The use of this equation is demonstrated in Example 1 below.

Example 1: Total TSS Removal Rate for Two BMPs in Series

A grass swale and an underdrained small-scale bioretention system are proposed to provide water quality treatment for runoff from a parking lot. The grass swale is designed for 50% TSS removal rate. The underdrained small-scale bioretention system is designed for 80% TSS removal rate.

From Table 5-1 in N.J.A.C. 7:8-5.2(f) and the BMP Manual chapters cited above, the presumptive TSS removal rates for these individual BMPs are as follows:

Grass Swale = 50 percent
Small-scale Bioretention System = 80 percent

Using Equation 4-1 to calculate the total TSS removal rate, R,

$$R = A + B - \left[\frac{(A \; x \; B)}{100}\right] = 50 + 80 - \left[\frac{(50 \; x \; 80)}{100}\right] = 130 - 40$$

$$= 90 \text{ (percent)}$$

Where:

A is the TSS removal rate, 50 percent for the grass swale,
B the TSS removal rate, 80 percent for the small-scale bioretention system
R is the overall TSS removal rate

It should be noted that the total TSS removal rate of the stormwater management system described in Example 1 above can also be computed by the following technique:

Initial TSS Load from the parking lot = 100%

TSS Load Removed by Grass Swale = 100% x 50% TSS Removal Rate = 50%

Remaining TSS Load Downstream of Grass Swale = 100%– 50% = 50%

TSS Load Removed by Small-scale Bioretention System = 50% x 80% TSS Removal Rate = 40%

Final TSS Load Downstream of Small-scale Bioretention System = 50% – 40% = 10%

Total TSS Removal Rate = 100% – 10% = 90%

This technique can also be used in place of *Equation 4*-1 when there are more than two BMPs in series.

Sites with Multiple Discharge Points and Subareas

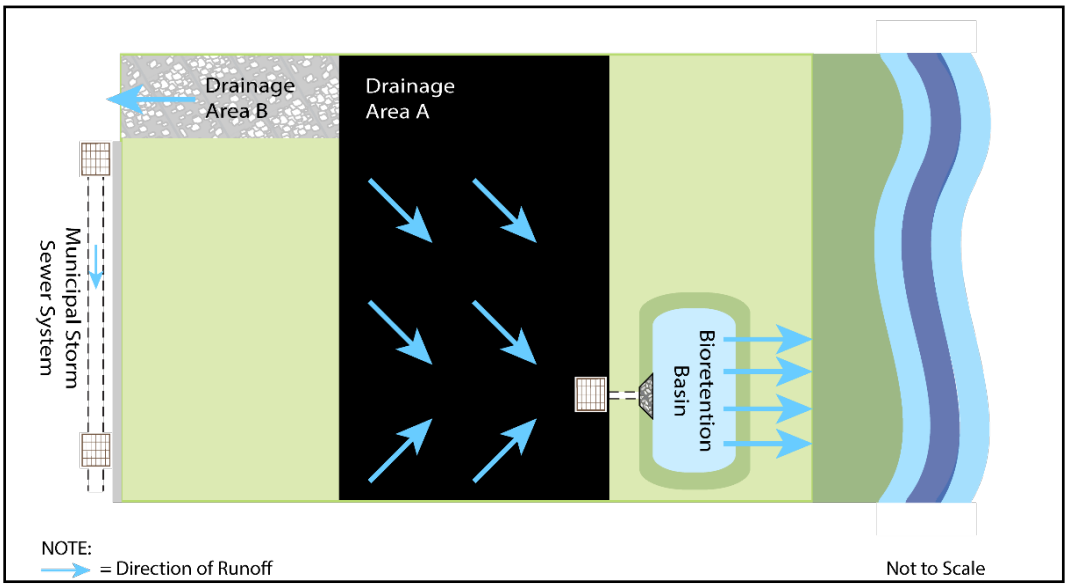
In accordance with N.J.A.C. 7:8-5.2(l), if runoff is discharged from a site at multiple points, the TSS removal requirement will have to be applied at each discharge point. If there are multiple onsite subareas to a single discharge point within the boundary of the site before the runoff leaves the site, an overall TSS

removal rate can be determined through a weighted average of the runoff volume from each of the subareas and the respective TSS removal rate.

Example 2 below provides further explanation of the procedures described above for computing TSS removal rates at sites with both multiple discharge points and subdrainage areas. In contrast to Example 2 where runoff from several subdrainage areas leave the site through multiple offsite discharge points, Example 3, demonstrates convergence of stormwater runoff from different drainage subareas into one signal offsite discharge point before the runoff leaves the site. An example of using a weighted average to determine an overall TSS removal rate for multiple converging subareas can be found in Example 3 below.

Example 2: TSS Removal Rates for Sites with Multiple Discharge Points and Subareas

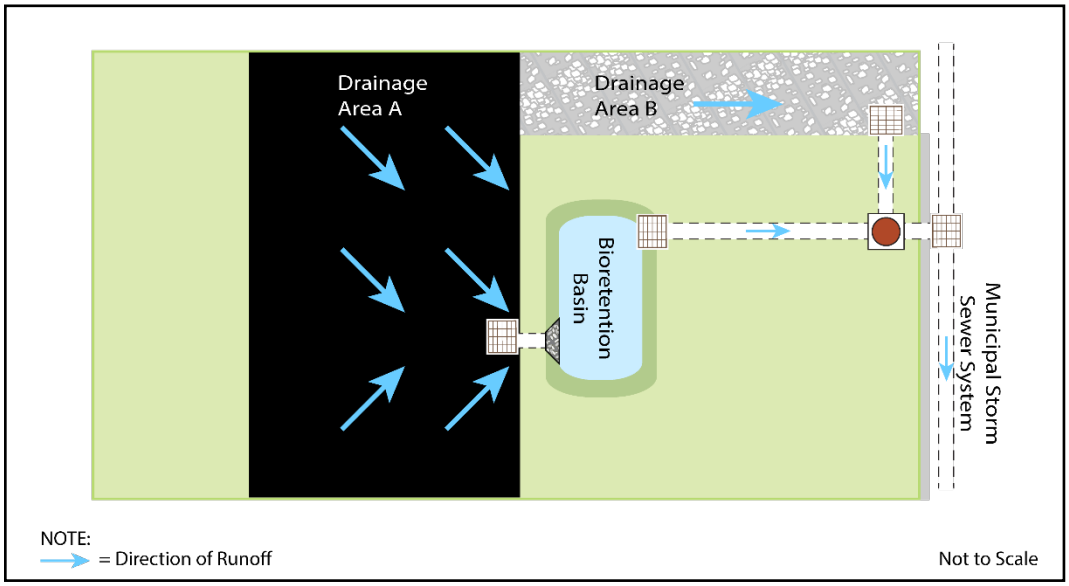
A proposed development has two subdrainage areas, A and B. Drainage Area A has a 2 acre impervious parking area, and Drainage Area B has an impervious driveway. Stormwater runoff from Drainage Area A will be treated by a small-scale bioretention basin rated for 90% TSS removal rate. Discharge from the small-scale bioretention basin will be directed overland to a stream. Drainage Area B has a 500 sf driveway that will drain to a roadside stormwater inlet, which is connected to a municipal storm sewer system. No treatment is proposed for the stormwater runoff from Drainage Area B. Can the 90% TSS removal rate of the TSS load for Drainage Area A be averaged with untreated runoff from Drainage Area B?



The answer is no. Stormwater runoff from Drainage Areas A and B does not converge before leaving the site. The 90% TSS removal rate for Drainage Area A cannot be averaged with the 0% TSS removal rate of Drainage Area B. Therefore, the untreated stormwater runoff from Drainage Area B does not meet the stormwater runoff quality standards, and therefore the proposed development does not meet the stormwater runoff quality standards.

Example 3: TSS Removal Rates for Subareas with a Converged Discharge Point

A proposed development has two subdrainage areas, A and B. Soils present onsite belong to Hydrologic Soil Group B. Drainage Area A has a 2 acre impervious parking area and Drainage Area B has a 5,000 sf gravel driveway. Runoff from Drainage Area A will be treated by a small-scale bioretention system rated as 90% TSS removal. Discharge from the small-scale bioretention system will be directed to an onsite manhole, which is then connected to a catch basin in the municipal storm sewer system below the street surface. The driveway in Drainage Area B will drain directly to an onsite manhole, and then to a connection manhole to the municipal storm sewer system. No treatment is proposed for the runoff from Drainage Area B. Can the 90% removal rate of the TSS load for Drainage Area A be averaged with the untreated runoff from Drainage Area B?



The answer is yes. The runoff from Drainage Areas A and B converge at the onsite manhole before the discharge of stormwater runoff leaves the site. The 90% TSS removal rate for Drainage Area A runoff can be averaged with the 0% TSS removal rate for Drainage Area B runoff.

In this example, stormwater runoff from the site's motor vehicle surfaces subject to the stormwater runoff quality standards is:

Drainage Area A: 2 acres or 87,120 sf

Drainage Area B: 5,000 sf

The weighted average TSS removal rate is calculated as follows:

$$\%\ \text{TSS} = \left[\frac{(90\%\ x\ 87{,}120\ sf) + (0\%\ x\ \ 5{,}000\ sf)}{(87{,}120{+}5{,}000)\ sf}\right] = 85.1\%$$

The weighted average TSS removal rate is 85.1%, which is greater than the 80% required. Therefore, the proposed development meets the stormwater runoff quality standards.

Reduction of Nutrients

In addition to TSS removal, the Stormwater Management rules also require the reduction of post-construction nutrients to the maximum extent feasible. In general, to demonstrate compliance with this requirement, a two- step approach should be used. First, the input of nutrients to the drainage area should be limited as much as feasible. Second, when selecting a stormwater management measure to address the TSS removal requirement, the measure with the best nutrient removal rate that also best meets the site constraints should be chosen. Details of each step in this approach are provided below.

Reducing Nutrient Input

Significant amounts of nutrients are in stormwater runoff due to fertilization of lawns. As described in *Chapter 2: Low Impact Development Techniques*, lawns should be minimized in favor of other vegetated cover. Existing site areas with desirable vegetative communities should be left in a natural state, and forested areas and meadows should be considered as alternatives to the standard lawn. Ground covers provide aesthetically pleasing, innovative landscapes that are adaptable to the local environment. A landscape design that maximizes these types of land cover, minimizing the use of turf grass lawn, can be beneficial in reducing the amounts of pesticides, as well as nutrients from fertilizers, found in stormwater runoff.

Using soil test results to determine the appropriate application of lime and fertilizer required for lawn areas will increase efficient uptake and decrease associated costs of lawn maintenance as well as minimize nutrient input. Soil test kits are available at most lawn and garden care centers as well as through the Rutgers Cooperative Extension county offices. Information of the county offices is available at https://njaes.rutgers.edu/county/. Fertilization specifications must also be included in the maintenance manual.

Application of fertilizer is subject to the fertilizer law, N.J.S.A. §58:10A-61 et seq., enacted on January 5, 2011. The fertilizer law limits application of fertilizer containing phosphorus or nitrogen in certain months of the year and restricts its application when the ground is frozen. The fertilizer law further requires phosphorus containing fertilizer and nitrogen containing fertilizer to be applied at specific loading rates and contain at least 20 percent slow-release nitrogen and zero percent phosphorus unless a soil test demonstrates a need for phosphorus to be added. Further details of the law are available at

https://www.nj.gov/dep/landuse/download/58_10a.pdf and
https://www.nj.gov/dep/healthylawnshealthywater.

Pet waste is another significant source of nutrients in stormwater runoff. To prevent or minimize pet waste problems, towns must have adopted pet waste ordinances pursuant to their MS4 permit, requiring residents to pick up after their animal and dispose of the material in the toilet or garbage on any property, private or public property, not owned or possessed by the pet owner.

Nutrient Removal Rates

Site conditions and the need to reduce post-construction TSS are primary factors in the selection of appropriate BMPs for a development site. However, removal of nutrients such as phosphorous and the

various forms of nitrogen must also be considered in this selection process. The chosen BMP must meet the TSS criteria and also must maximize nutrient removal from stormwater runoff from the site. To assist with the selection of BMPs for nutrient removal, information regarding typical nutrient removal rates is provided in Table 4-3 on the following page.

Table 4-3: Typical TSS, Phosphorous and Nitrogen Removal Rates for BMPs

Best Management Practice (BMP)	Total Suspended Solid Removal Rate (%)	Total Phosphorus Removal Rate (%)	Total Nitrogen Removal Rate (%)
Cistern	0	0	0
Dry Well	0	0	0
Grass Swale	50 or less	0	0
Green Roof	0	0	0
Manufactured Treatment Devices	50 or 80	Not Rated	Not Rated
Pervious Paving System	80	60	30
Small-Scale Bioretention Basin/ Bioretention Basin*	80 or 90	70	30
Small-Scale Infiltration Basin/ Infiltration Basin*	80	60	30
Small-Scale Sand Filter/ Sand Filter*	80	50	30
Vegetative Filter Strip	60-80	15	0
Standard Constructed Wetland*	90	50	30
Extended Detention Basin*	40-60	20	20
Subsurface Gravel Wetland*	90	50	30
GI Wet Pond *	50-90	50	30

Note

* The BMP can be used to meet the stormwater water quality standards only when a waiver or variance from N.J.A.C. 7:8-5.3 is obtained.

The nutrient removal rates presented in Table 4-3 should be considered typical values based upon data from a range of research studies. Due to the multiple forms and complex behavior of nutrients in stormwater runoff and the similarly complex processes by which nutrient loading is altered by BMPs, actual removal rates for specific BMPs and development sites may vary.

The nutrient removal data in Table 4-3 is intended to assist designers in the selection of appropriate BMPs to meet the maximum feasible nutrient removal requirement in the Stormwater Management rules. During this selection process, primary consideration should be given to achieving the TSS removal

requirement in the rules with one or more BMPs that are compatible with and responsive to site conditions, constraints and safety concerns. The selection process should then be further refined to achieve the maximum feasible nutrient removal required by the rules using the BMP nutrient removal data in Table 4-3, followed by maintenance considerations.

Additional Considerations

From the information presented in this chapter, it should be evident that BMPs are intended to reduce the pollutants in stormwater runoff. However, sometimes an unintended consequence of stormwater management facilities is their attractiveness to waterfowl, such as Canada geese, which are attracted to lawn areas adjacent to water bodies. As such, wet ponds and other stormwater management structures can appeal to these waterfowl, whose resulting fecal input can result in an increase in nutrient loading to systems that are intended to reduce such pollutants. Therefore, adjustments to the design of a BMP and/or maintenance plan may be necessary to discourage waterfowl from contributing pollutants to the stormwater management measure. Additional guidance on Canada geese is available in *Management of Canada Geese in Suburban Areas: A Guide to the Basics*, available online at:

https://www.nj.gov/agriculture/pdf/managingcanadagoosedamage.pdf

and in the Tier A Guidance Document, *Chapter 3.5: Pollution Prevention/Good Housekeeping for Municipal Operators* available online at:

https://dep.nj.gov/wp-content/uploads/njpdes-stormwater/tier-a-chapter-3-5.pdf.

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