

Chapter 207. Land Development

Article VI. Stormwater Management

§ 207-55. General standards.

A. Design and performance standards for stormwater management measures.

- (1) Stormwater management measures for major development shall be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards in § 207-56. To the maximum extent practicable, these standards shall be met by incorporating nonstructural stormwater management strategies into the design. If these strategies alone are not sufficient to meet these standards, structural stormwater management measures necessary to meet these standards shall be incorporated into the design.
- (2) The standards in this article apply only to new major development and are intended to minimize the impact of stormwater runoff on water quality and water quantity in receiving water bodies and maintain groundwater recharge. The standards do not apply to new major development to the extent that alternative design and performance standards are applicable under a regional stormwater management plan or water quality management plan adopted in accordance with Department rules.

B. Prohibited conduct. No person in control of private property (except a residential lot with one single-family house) shall authorize the repaving, repairing (excluding the repair of individual potholes), resurfacing (including top coating or chip sealing with asphalt emulsion or a thin base of hot bitumen), reconstructing or altering any surface that is in direct contact with an existing storm drain inlet on that property unless the storm drain inlet either:

[Added 7-20-2010 by Ord. No. 18-2010]

- (1) Already meets the design standard in § 207-56E(3) to control passage of solid and floatable materials; or
- (2) Is retrofitted or replaced to meet the standard in § 207-56E(3) prior to the completion of the project.

C. C. Enforcement. This article shall be enforced by the Zoning Officer or Code Enforcement Officer of the City of Burlington.

[Added 7-20-2010 by Ord. No. 18-2010]

D. D. Penalties. Any person(s) who is found to be in violation of the provisions of this article shall be subject to a fine not to exceed the maximum amount permitted by N.J.S.A. 40:49-5 for each storm drain inlet that is not retrofitted to meet the design standard.

[Added 7-20-2010 by Ord. No. 18-2010]

§ 207-56. Stormwater management requirements for major development.

A. The development shall incorporate a maintenance plan for the stormwater management measures incorporated into the design of a major development in accordance with § 207-62.

- B. Stormwater management measures shall avoid adverse impacts of concentrated flow on habitat for threatened and endangered species as documented in the Department' Landscape Project or Natural Heritage Database established under N.J.S.A. 13:1B-15.147 through 15.150, particularly *Helonias bullata* (swamp pink) and/or *Clemmys muhlenbergi* (bog turtle).
- C. The following linear development projects are exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Subsections F and G:
- (1) The construction of an underground utility line, provided that the disturbed areas are revegetated upon completion;
 - (2) The construction of an aboveground utility line, provided that the existing conditions are maintained to the maximum extent practicable; and
 - (3) The construction of a public pedestrian access, such as a sidewalk or trail with a maximum width of 14 feet, provided that the access is made of permeable material.
- D. A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Subsections F and G may be obtained for the enlargement of an existing public roadway or railroad; or the construction or enlargement of a public pedestrian access, provided that the following conditions are met:
- (1) The applicant demonstrates that there is a public need for the project that cannot be accomplished by any other means;
 - (2) The applicant demonstrates through an alternatives analysis, that through the use of nonstructural and structural stormwater management strategies and measures, the option selected complies with the requirements of Subsections F and G to the maximum extent practicable;
 - (3) The applicant demonstrates that, in order to meet the requirements of Subsections F and G, existing structures currently in use, such as homes and buildings, would need to be condemned; and
 - (4) The applicant demonstrates that it does not own or have other rights to areas, including the potential to obtain through condemnation lands not falling under Subsection D(3) above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate the requirements of Subsections F and G that were not achievable on site.
- E. Nonstructural stormwater management strategies.
- (1) To the maximum extent practicable, the standards in Subsections F and G shall be met by incorporating nonstructural stormwater management strategies set forth at Subsection E into the design. The applicant shall identify the nonstructural measures incorporated into the design of the project. If the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management measures identified in Subsection E(2) below into the design of a particular project, the applicant shall identify the strategy considered and provide a basis for the contention.
 - (2) Nonstructural stormwater management strategies incorporated into site design shall:
 - (a) Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;
 - (b) Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces;
 - (c) Maximize the protection of natural drainage features and vegetation;
 - (d) Minimize the decrease in the "time of concentration from preconstruction to postconstruction. "Time of concentration" is defined as the time it takes for runoff to travel from the hydraulically

most distant point of the watershed to the point of interest within a watershed;

- (e) Minimize land disturbance, including clearing and grading;
 - (f) Minimize soil compaction;
 - (g) Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;
 - (h) Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas;
 - (i) 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. Such source controls include, but are not limited to:
 - [1] Site design features that help to prevent accumulation of trash and debris in drainage systems, including features that satisfy Subsection **E(3)** below;
 - [2] Site design features that help to prevent discharge of trash and debris from drainage systems;
 - [3] Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and
 - [4] When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules.
- (3) Site design features identified under Subsection **E(2)(i)[2]** above shall comply with the following standard to control passage of solid and floatable materials through storm drain inlets. For purposes of this subsection, "solid and floatable materials" means sediment, debris, trash, and other floating, suspended, or settleable solids. For exemptions to this standard see Subsection **E(3)(c)** below.
- (a) Design engineers shall use either of the following grates whenever they use a grate in pavement or another ground surface to collect stormwater from that surface into a storm drain or surface water body under that grate:
 - [1] The New Jersey Department of Transportation (NJDOT) bicycle safe grate, which is described in Chapter 2.4 of the NJDOT Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines (April 1996); or
 - [2] A different grate, if each individual clear space in that grate has an area of no more than seven square inches, or is no greater than 0.5 inch across the smallest dimension.
 - [3] Examples of 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.
 - (b) Whenever design engineers use a curb-opening inlet, the clear space in that curb opening (or each individual clear space, if the curb opening has two or more clear spaces) shall have an area of no more than seven square inches, or be no greater than two inches across the smallest dimension. This type of curb opening inlet is only required in areas of the City that are outside of the floodplain.
 - (c) This standard does not apply:

- [1] Where the review agency 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 these standards;
 - [2] Where flows from the water quality design storm as specified in Subsection **G(1)** are conveyed through any device (e.g., end of pipe netting facility, manufactured treatment device, or a catch basin hood) that is designed, at a minimum, to prevent delivery of all solid and floatable materials that could not pass through one of the following:
 - [a] A rectangular space 4 5/8 inches long and 1 1/2 inches wide (this option does not apply for outfall netting facilities); or
 - [b] A bar screen having a bar spacing of 0.5 inch.
 - [3] Where flows are conveyed through a trash rack that has parallel bars with one-inch spacing between the bars, to the elevation of the water quality design storm as specified in Subsection **G(1)**;
 - [4] Where the New Jersey Department of Environmental Protection 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; or
 - [5] Where the area flows to the Kennedy Lake system.
- (4) Any land area used as a nonstructural stormwater management measure to meet the performance standards in Subsections **F** and **G** shall be dedicated to a government agency, subjected to a conservation restriction filed with the appropriate County Clerk's office, or subject to an approved equivalent restriction that ensures that measure or an equivalent stormwater management measure approved by the reviewing agency is maintained in perpetuity.
- (5) Guidance for nonstructural stormwater management strategies is available in the New Jersey Stormwater Best Management Practices Manual. The BMP Manual may be obtained from the address identified in § 207-60, or found on the Department's website at www.njstormwater.org.
- F. Erosion control, groundwater recharge and runoff quantity standards.
- (1) This subsection contains minimum design and performance standards to control erosion, encourage and control infiltration and groundwater recharge, and control stormwater runoff quantity impacts of major development.
 - (a) The minimum design and performance standards for erosion control are those established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules.
 - (b) The minimum design and performance standards for groundwater recharge are as follows:
 - [1] The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at § 207-57, either:
 - [a] Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100% of the average annual preconstruction groundwater recharge volume for the site; or
 - [b] Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from preconstruction to postconstruction for the two-year storm is infiltrated.
 - [2] This groundwater recharge requirement does not apply to projects within the urban redevelopment area, or to projects subject to Subsection **F(1)(b)[3]** below. An "urban

redevelopment area" is defined as previously developed portions of areas delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA₁). The entire City of Burlington is located in Metropolitan Planning Area (PA₁) on the New Jersey State Plan and Redevelopment Plan Map.

- [3] The following types of stormwater shall not be recharged:
- [a] Stormwater from areas of high pollutant loading. High pollutant loading areas are areas in industrial and commercial developments where solvents and/or petroleum products are loaded/unloaded, stored, or applied, areas where pesticides are loaded/unloaded or stored; areas where hazardous materials are expected to be present in greater than reportable quantities as defined by the United States Environmental Protection Agency (EPA) at 40 CFR 302.4; areas where recharge would be inconsistent with Department-approved remedial action work plan or landfill closure plan and areas with high risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities; and
 - [b] Industrial stormwater exposed to source material. "Source material" means any material(s) or machinery, located at an industrial facility, that is directly or indirectly related to process, manufacturing or other industrial activities, which could be a source of pollutants in any industrial stormwater discharge to groundwater. Source materials include, but are not limited to, raw materials; intermediate products; final products; waste materials; by-products; industrial machinery and fuels, and lubricants, solvents, and detergents that are related to process, manufacturing, or other industrial activities that are exposed to stormwater.
- [4] The design engineer shall assess the hydraulic impact on the groundwater table and design the site so as to avoid adverse hydraulic impacts. Potential adverse hydraulic impacts include, but are not limited to, exacerbating a naturally or seasonally high water table so as to cause surficial ponding, flooding of basements, or interference with the proper operation of subsurface sewage disposal systems and other subsurface structures in the vicinity or downgradient of the groundwater recharge area.
- (c) In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff calculations at § 207-57, complete one of the following:
- [1] Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, postconstruction runoff hydrographs for the two-, ten-, and one-hundred-year storm events do not exceed, at any point in time, the preconstruction runoff hydrographs for the same storm events;
 - [2] Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the preconstruction condition, in the peak runoff rates of stormwater leaving the site for the two-, ten-, and one-hundred-year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site. This analysis shall include the analysis of impacts of existing land uses and projected land uses assuming full development under existing zoning and land use ordinances in the drainage area;
 - [3] Design stormwater management measures so that the postconstruction peak runoff rates for the two-, ten-, and one-hundred-year storm events are 50%, 75% and 80%, respectively, of the preconstruction peak runoff rates. The percentages apply only to the postconstruction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed. The percentages shall not be applied to postconstruction stormwater runoff into tidal flood hazard areas if the increased volume of stormwater runoff will not increase flood damages below the point of discharge; or

- [4] In tidal flood hazard areas, stormwater runoff quantity analysis in accordance with Subsection **F(1)(c)[1]**, [2] and [3] above shall only be applied if the increased volume of stormwater runoff could increase flood damages below the point of discharge. The applicant shall use the Federal Emergency Management Association (FEMA) maps to determine if the site is located in the tidal flood hazard area within the City of Burlington.
- [5] Underground detention facilities are not recommended as a design solution unless the detention facility is located above the flood elevation. The City of Burlington will not accept maintenance responsibility for underground stormwater detention facilities. Exemptions from the runoff quantity design and performance standards due to the flood elevation condition may be offset through mitigation projects of equal value.

G. Stormwater runoff quality standards.

- (1) Stormwater management measures shall be designed to reduce the postconstruction load of total suspended solids (TSS) in stormwater runoff by 80% of the anticipated load from the developed site, expressed as an annual average. Stormwater management measures shall only be required for water quality control if an additional 1/4 acre of impervious surface is being proposed on a development site. The requirement to reduce TSS does not apply to any stormwater runoff in a discharge regulated under a numeric effluent limitation for TSS imposed under the New Jersey Pollution Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, or in a discharge specifically exempt under a NJPDES permit from this requirement. The water quality design storm is 1.25 inches of rainfall in two hours. Water quality calculations shall take into account the distribution of rain from the water quality design storm, as reflected in Table 1. The calculation of the volume of runoff may take into account the implementation of nonstructural and structural stormwater management measures.

Table 1: Water Quality Design Storm Distribution

Time (minutes)	Cumulative Rainfall (inches)	Time (minutes)	Cumulative Rainfall (inches)
0	0.0000	65	0.8917
5	0.0083	70	0.9917
10	0.0166	75	1.0500
15	0.0250	80	1.0840
20	0.0500	85	1.1170
25	0.0750	90	1.1500
30	0.1000	95	1.1750
35	0.1330	100	1.2000
40	0.1660	105	1.2250
45	0.2000	110	1.2334
50	0.2583	115	1.2417
55	0.3583	120	1.2500
60	0.6250		

- (2) For purposes of TSS reduction calculations, Table 2 below presents the presumed removal rates for certain BMPs designed in accordance with the New Jersey Stormwater Best Management Practices Manual. The BMP Manual may be obtained from the address identified in § 207-60, or found on the Department's website at www.njstormwater.org. The BMP Manual and other sources of technical guidance are listed in § 207-60. TSS reduction shall be calculated based on the removal rates for the BMPs in Table 2 below. Alternative removal rates and methods of calculating removal rates may be used if the design engineer provides documentation demonstrating the capability of these alternative rates and methods to the review agency. A copy of any approved alternative rate or method of calculating the removal rate shall be provided to the Department at the following address: Division of Watershed

Management, New Jersey Department of Environmental Protection, PO Box 418, Trenton, New Jersey, 08625-0418.

- (3) If more than one BMP in series is necessary to achieve the required eighty-percent TSS reduction for a site, the applicant shall utilize the following formula to calculate TSS reduction:

$$R = A + B - (AXB)/100$$

Where

- R = total TSS percent load removal from application of both BMPs, and
 A = the TSS percent removal rate applicable to the first BMP
 B = the TSS percent removal rate applicable to the second BMP

Table 2: TSS Removal Rates for BMPs

Best Management Practice	TSS Percent Removal Rate
Bioretention systems	90
Constructed stormwater wetland	90
Extended detention basin	40 to 60
Infiltration structure	80
Manufactured treatment device	See § 207-59C
Sand filter	80
Vegetative filter strip	60 to 80
Wet pond	50 to 90

- (4) If there is more than one on-site drainage area, the eighty-percent TSS removal rate shall apply to each drainage area, unless the runoff from the subareas converge on site in which case the removal rate can be demonstrated through a calculation using a weighted average.
- (5) Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the postconstruction nutrient load of the anticipated load from the developed site in stormwater runoff generated from the water quality design storm. In achieving reduction of nutrients to the maximum extent feasible, the design of the site shall include nonstructural strategies and structural measures that optimize nutrient removal while still achieving the performance standards in Subsections **F** and **G**.
- (6) Additional information and examples are contained in the New Jersey Stormwater Best Management Practices Manual, which may be obtained from the address identified in § 207-60.
- (7) In accordance with the definition of FW₁ at N.J.A.C. 7:9B-1.4, stormwater management measures shall be designed to prevent any increase in stormwater runoff to waters classified as FW₁.
- (8) Special water resource protection areas shall be established along all waters designated Category One at N.J.A.C. 7:9B, and perennial or intermittent streams that drain into or upstream of the Category One waters as shown on the USGS Quadrangle Maps or in the County Soil Surveys, within the associated HUC₁₄ drainage area. These areas shall be established for the protection of water quality, aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, and exceptional fisheries significance of those established Category One waters. These areas shall be designated and protected as follows:
- (a) The applicant shall preserve and maintain a special water resource protection area in accordance with one of the following:

- [1] A three-hundred-foot special water resource protection area shall be provided on each side of the waterway, measured perpendicular to the waterway from the top of the bank outwards

or from the center line of the waterway where the bank is not defined, consisting of existing vegetation or vegetation allowed to follow natural succession.

- [2] Encroachment within the designated special water resource protection area under Subsection **G(8)(a)[1]** above shall only be allowed where previous development or disturbance has occurred (for example, active agricultural use, parking area or maintained lawn area). The encroachment shall only be allowed where applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable. In no case shall the remaining special water resource protection area be reduced to less than 150 feet as measured perpendicular to the top of bank of the waterway or center line of the waterway where the bank is undefined. All encroachments proposed under this subparagraph shall be subject to review and approval by the Department.
- (b) All stormwater shall be discharged outside of and flow through the special water resource protection area and shall comply with the standard for off-site stability in the "Standards For Soil Erosion and Sediment Control in New Jersey," established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq.
- (c) If stormwater discharged outside of and flowing through the special water resource protection area cannot comply with the standard for off-site stability in the "Standards for Soil Erosion and Sediment Control in New Jersey," established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., then the stabilization measures in accordance with the requirements of the above standards may be placed within the special water resource protection area, provided that:
- [1] Stabilization measures shall not be placed within 150 feet of the Category One waterway;
- [2] Stormwater associated with discharges allowed by this section shall achieve a ninety-five-percent TSS postconstruction removal rate;
- [3] Temperature shall be addressed to ensure no impact on the receiving waterway;
- [4] The encroachment shall only be allowed where the applicant demonstrates that the functional value and overall condition of the special water resource protection area will be maintained to the maximum extent practicable;
- [5] A conceptual project design meeting shall be held with the appropriate Department staff and Soil Conservation District staff to identify necessary stabilization measures; and
- [6] All encroachments proposed under this section shall be subject to review and approval by the Department.
- (d) A stream corridor protection plan may be developed by a regional stormwater management planning committee as an element of a regional stormwater management plan, or by a municipality through an adopted municipal stormwater management plan. If a stream corridor protection plan for a waterway subject to Subsection **G(8)** has been approved by the Department of Environmental Protection, then the provisions of the plan shall be the applicable special water resource protection area requirements for that waterway. A stream corridor protection plan for a waterway subject to Subsection **G(8)** shall maintain or enhance the current functional value and overall condition of the special water resource protection area as defined in Subsection **G(8)(a)[1]** above. In no case shall a stream corridor protection plan allow the reduction of the special water resource protection area to less than 150 feet as measured perpendicular to the waterway subject to this subsection.
- (e) Subsection **G(8)** does not apply to the construction of one individual single-family dwelling that is not part of a larger development on a lot receiving preliminary or final subdivision approval on or before February 2, 2004, provided that the construction begins on or before February 2, 2009.

