SUBCHAPTER 8 STORMWATER RUNOFF AND WATER QUALITY IMPACT REVIEW

7:45-8.1 Purpose and scope of review

(a) Except for those projects expressly exempted by this chapter or waived by the Commission, the Commission shall review the following for stormwater runoff and water quality impact:
1. Major projects within Zone A;
2. Minor projects within Zone A that will result in 800 square feet or more of impervious surface, cumulatively since January 11, 1980; and
3. Major projects within Zone B.

(b) The scope of review for stormwater runoff and water quality impact includes the following:
1. New impervious surface;
2. Redevelopment of existing impervious surface; and
3. Collection of stormwater runoff from ¼ acre or more of existing impervious surface where stormwater is not currently collected.

7:45-8.2 Submission requirements

(a) The following shall be submitted to the Commission for review of stormwater runoff and water quality impacts:
1. United States Geological Survey (U.S.G.S.) Location Map;
2. Full set of site grading and utility plans including lot and block lines;
3. Pre-Development and Post-Development Drainage Area Maps (1"=100' or 1"=200'), showing two feet contour intervals;
4. Photos of drainage and site conditions;
5. Description of existing site conditions including outlines of woodland cover and utilities;
6. Soils maps of site, including soil types and classification;
7. Flow chart for hydrologic model;
8. Stage/volume/outflow chart, calculations for chart, and constants used in the calculations (weir and pressure flow coefficients);
9. Groundwater elevation and depth to groundwater;
10. Details of outlet structure(s);
11. Summary tables showing comparison of pre- and post-developed conditions for the one, two, 10 and 100-year storm events;
12. Detailed calculations for pre-developed and post-developed conditions;
13. Calculations to demonstrate compliance with the water quality provision;
14. Soils information, including percolation rates;
15. Recharge spreadsheet;
16. Non-structural points system spreadsheets; and
17. Stormwater management calculations on a digital disk in addition to the paper version.

7:45-8.3 Specific standards for outfalls

(a) For projects involving new or existing outfalls in the Review Zone, the following standards shall be required:
1. New outfalls to the Canal are prohibited;
2. New sources of stormwater that tie into drainage systems discharging into the Canal are prohibited;
3. New outfalls within stream corridors of water courses that discharge to the Canal are prohibited;

4. New outfall structures within the Park or within 300 feet of the Canal are prohibited;
5. For projects discharging to existing outfalls in the Canal, the Commission shall consider the following prioritization of types of remediation measures:
    i. Removal of the existing outfalls; or
    ii. Where the removal of existing outfalls is not possible under (a)5i above, stormwater being discharged through the outfall shall be treated to achieve 95 percent TSS removal for the water quality design storm, as described at N.J.A.C. 7:45-8.8; or
    iii. Where treatment for all stormwater is not possible under (a)5ii above, stormwater from offsite areas shall be treated to achieve 95 percent total suspended solids (TSS) removal as follows:
        (1) Water quality treatment shall be provided for a developed area within the Canal's drainage basin that does not receive water quality treatment. The water quality treatment must achieve one of the following:
            a. An equivalent reduction in TSS loadings for twice the volume of stormwater generated by the proposed project during the water quality design storm; or
            b. An equivalent reduction in TSS loadings for twice the flow rate generated by the proposed project during the water quality design storm.
        (2) An applicant shall provide clear and convincing documentation to demonstrate that a proposed project requires use of an existing outfall into the Canal, and that the remediation measures in (a)5 above cannot be met. If the applicant so demonstrates, alternative compensatory measures including offsite mitigation for water quality must then be provided, in accordance with N.J.A.C. 7:45-12.6, Waiver of stormwater runoff and water quality.

7:45-8.4 Specific nonstructural stormwater management strategies

(a) To the maximum extent practicable, the standards in this subchapter shall be met by incorporating nonstructural stormwater management strategies into the design. The persons submitting an application for review shall identify the nonstructural strategies 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 strategies identified in (b) below into the design of a particular project, the applicant shall identify the strategy and provide a basis for the contention.

(b) Nonstructural stormwater management strategies incorporated into site design shall:
1. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;
2. Minimize impervious surface and break up or disconnect the flow of runoff over impervious surface;
3. Maximize the protection of natural drainage features and vegetation;
4. 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;
5. Minimize land disturbance including clearing and grading;
6. Minimize soil compaction;
7. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;

8. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas; and
9. 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. These source controls include, but are not limited to:
    i. Site design features that help to prevent accumulation of trash and debris in drainage systems;
    ii. Site design features that help to prevent discharge of trash and debris from drainage systems;
    iii. Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and
    iv. 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.

(c) Guidance for nonstructural stormwater management strategies is available in the New Jersey Stormwater Best Management Practices Manual available from the Department through www.dandrcanal.com. The applicant may submit the Department's Nonstructural Stormwater Strategies Point System worksheet (available at www.dandrcanal.com) to show compliance with this section of the regulations.

7:45-8.5 Specific recharge standards

(a) The minimum design and performance standards for groundwater recharge are as follows:
1. The design engineer shall, using the guidance provided in the New Jersey Stormwater Best Management Practices Manual for stormwater runoff and groundwater recharge calculations, either:
    i. Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual preconstruction groundwater recharge volume for the site; or
    ii. Demonstrate through hydrologic and hydraulic analyses that any increase of stormwater runoff volume from pre-construction to post-construction for the two-year storm is infiltrated.
2. The groundwater recharge requirement does not apply to redevelopment projects that are subject to the following types of existing stormwater:
    i. 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 plans or landfill closure plans and areas with high risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities; and
    ii. 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, that 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

3. The design engineer shall assess the hydraulic impact on the groundwater table and design the site so as to avoid all material, measurable adverse hydraulic impacts to the maximum extent possible. Potential adverse hydraulic impacts include, but are not limited to, exacerbating a naturally or seasonally high water table so as to cause surface 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.

7:45-8.6 Specific stormwater runoff quantity standards

(a) In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff, complete one of the following:

1. Design 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.
2. Demonstrate through hydrologic and hydraulic analyses that for stormwater leaving the site, post-construction runoff hydrographs for the two, 10, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events;
3. Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the pre-construction condition, in the peak runoff rates of stormwater leaving the site for the two, 10, and 100-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;

(b) The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed.

7.45-8.7 Specific water quality standards

(a) 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 by 80 percent of the anticipated load from the developed site, expressed as an annual average. 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 below. The calculation of the volume of runoff may take into account the implementation of non-structural 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		

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 Pollutant Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, or in a discharge specifically exempt under a NJPDES permit from this requirement.

(b) For purposes of TSS reduction calculations, Table 2 below is 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 Commission's website at www.dandrcanal.com. 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 Commission.

(c) If more than one BMP in series is necessary to achieve the required 80 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,
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

Bio Retention Systems	90
Constructed Stormwater Wetland	90
Extended Detention Basin	40-60
Infiltration Structure	80
Manufactured Treatment Devices (See certification by NJCATS on njstormwawer.org)	50-80
Sand Filter	80
Vegetative Filter Strip	60-80
Wet Pond	50-90

(d) If there is more than one onsite drainage area, the 80 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.

(e) Additional information and examples are contained in the New Jersey Stormwater Best Management Practices Manual.

7.45-8.8 Specific stormwater management maintenance requirements

(a) Responsibility for operation and maintenance of stormwater facilities installed, including periodic removal and disposal of accumulated particulate material and debris, unless assumed by a governmental agency, shall remain with the owner of the property and runs with the land to all heirs, successors, persons and assigns and to any and all mortgagees. Permanent conservation and maintenance easements to ensure continued performance of these obligations shall be completed and executed by the owner of the property on forms provided by the Commission. Stormwater facilities maintained by local, county or State government agencies shall not be required to file a conservation and maintenance easement. The easements shall include, but not be limited to, the following information provided by the applicant:

1. A list of all structural stormwater management facilities; and
2. A maintenance plan for the stormwater management measures incorporated into the design of a major development. The maintenance plan shall contain specific preventive maintenance tasks and schedules, and the name, address, and telephone number of the person or persons responsible for preventive and corrective maintenance (including replacement). Maintenance guidelines for stormwater management measures are available in the New Jersey Stormwater Best Management Practices 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.

(b) 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.

(c) The person responsible for maintenance identified under (a) above shall maintain a detailed log of all preventive 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.

(d) The person responsible for maintenance identified under (a) above shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan as needed.

(e) The Commission may require the recordation in the County Clerk's office of a Conservation Restriction for any land area used as a nonstructural stormwater management measure to meet the performance standards in N.J.A.C. 7:45-8.4. The Conservation Restriction shall be subject to the Commission's prior approval, or equivalent restriction that ensures that measure or an equivalent stormwater management measure is maintained in perpetuity.

(f) Nothing in this section shall preclude the municipality in which the project is located from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53.