



Municipal Stormwater Management Plan

For the

Borough of Roseland

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Introduction

This Municipal Stormwater Management Plan (MSWMP) documents the strategy for the Borough of Roseland to address stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development, defined as projects that disturb one or more acre of land. These standards are intended to minimize the adverse impact of stormwater runoff on water quality and quantity and the loss of groundwater recharge that provides baseflow in receiving water bodies. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities.

A "build-out" analysis has not been included in this plan, the Borough has less than one square mile available for development. The plan also addresses the review and update of existing ordinances to allow for project designs that include low impact development techniques. The final component of this plan is a mitigation strategy for when a variance or exemption of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, specific stormwater management measures are identified to lessen the impact of existing development.

Goals

The goals of this MSWMP are to:

- 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 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; and
- protect public safety through the proper design and operation of stormwater basins.

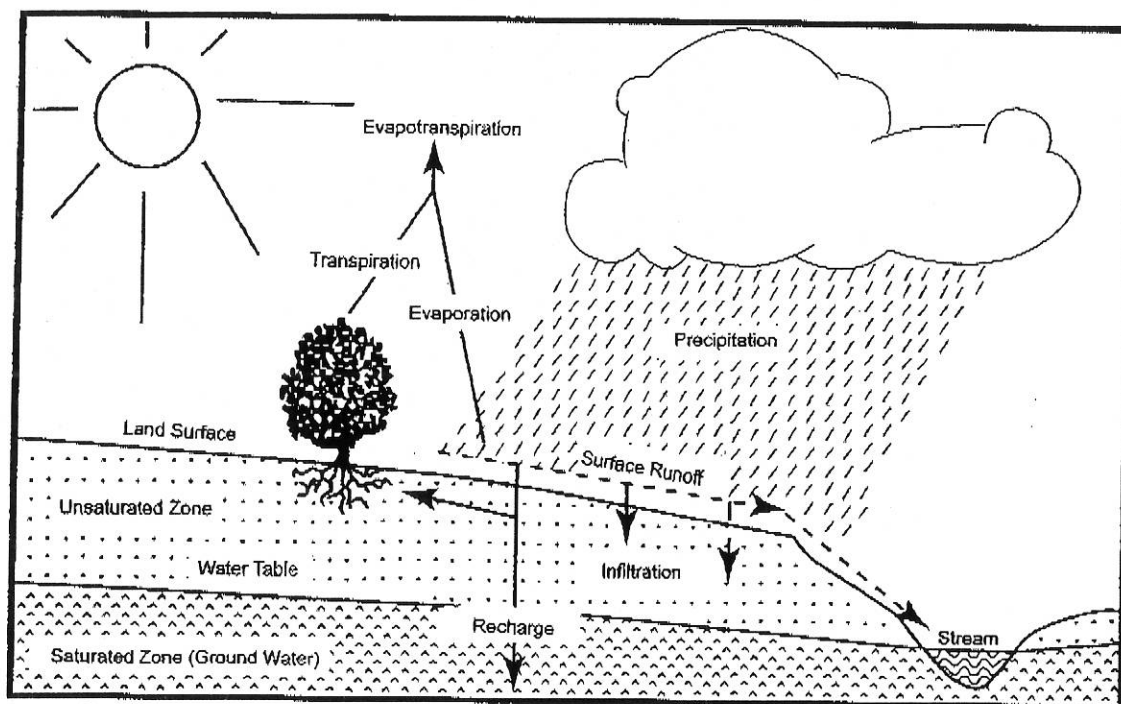
To achieve these goals, this plan outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management controls to address impacts from existing development. Preventative and corrective maintenance strategies are included in the plan to ensure long-term effectiveness of stormwater management facilities. The plan also outlines safety standards for stormwater infrastructure to be implemented to protect public safety.

Stormwater Discussion

Land development can dramatically alter the hydrologic cycle (See Figure C-1) of a site and, ultimately, an entire watershed. Prior to development, native vegetation can either directly intercept precipitation or draw that portion that has infiltrated into the ground and return it to the atmosphere through evapotranspiration. Development can remove this beneficial vegetation and replace it with lawn or impervious cover, reducing the site's evapotranspiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. Impervious areas that are connected to each other through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This shortening of the transport or travel time quickens the rainfall-runoff response of the drainage area, causing flow in downstream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration which, in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion. Reduced base flows can also negatively impact the hydrology of adjacent wetlands and the health of biological communities that depend on base flows. Finally, erosion and sedimentation can destroy habitat from which some species cannot adapt.

In addition to increases in runoff peaks, volumes, and loss of groundwater recharge, land development often results in the accumulation of pollutants on the land surface that runoff can mobilize and transport to streams. New impervious surfaces and cleared areas created by development can accumulate a variety of pollutants from the atmosphere, fertilizers, animal wastes, and leakage and wear from vehicles. Pollutants can include metals, suspended solids, hydrocarbons, pathogens, and nutrients.

Figure C-1: Groundwater Recharge in the Hydrologic Cycle



Source: New Jersey Geological Survey Report GSR-32.

In addition to increased pollutant loading, land development can adversely affect water quality and stream biota in more subtle ways. For example, stormwater falling on impervious surfaces or stored in detention or retention basins can become heated and raise the temperature of the downstream waterway, adversely affecting cold water fish species such as trout. Development can remove trees along stream banks that normally provide shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

Background

The Borough of Roseland encompasses a 3.52 square mile area in Essex County, New Jersey. In comparison to the rest of the County (2% Growth), the Borough of Roseland has been under moderate development pressure. The population of the Borough has increased from 4,847 in 1990, to 5,298 in 2000. This 9.3% population increase has resulted in a moderate demand for housing. Figure C-2 illustrates the waterways in the Borough. Figure C-3 depicts the Township boundary on the USGS quadrangle maps.

The New Jersey Department of Environmental Protection (NJDEP) has established an Ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state of New Jersey. These sites are sampled for benthic macroinvertebrates by NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics. The 1999 Passaic

Region AMNET study for WMA-06 was referenced for the Borough and was given a bioassessment rating of Non-Impaired.

The three major rivers that encompass the Borough of Roseland are the Passaic River (along the Western township boundary), the North and South Branch of Foulerton's Brook (running through the middle of the Borough) and the Canoe Brook (which runs in close proximity to the Southern boundary.). In addition to the AMNET data, the NJDEP and other regulatory agencies collect water quality chemical data on the streams in the state. The Passaic River (located at Eagle Rock Ave. in East Hanover) is listed as an impaired waterbody due to Benthic Macroinvertebrates (low priority), Dissolved Solids (medium priority), Phosphorous (high priority) and Total Suspended Solids (medium priority) according to Sublist 5 of the 2004 Integrated List. These data show that the Passaic River frequently exceeds the state's criteria. This means that the river is an impaired waterway and the NJDEP is required to develop a Total Maximum Daily Load (TMDL) for these pollutants for each waterway. A TMDL for any of the above parameters has not been developed.

A TMDL is the amount of a pollutant that can be accepted by a waterbody without causing an exceedance of water quality standards or interfering with the ability to use a waterbody for one or more of its designated uses. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require an NJPDES permit to discharge, and nonpoint source, which includes stormwater runoff from agricultural areas and residential areas, along with a margin of safety. Provisions may also be made for future sources in the form of reserve capacity. An implementation plan is developed to identify how the various sources will be reduced to the designated allocations. Implementation strategies may include improved stormwater treatment plants, adoption of ordinances, reforestation of stream corridors, retrofitting stormwater systems, and other BMPs.

The New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d)) (Integrated List) is required by the federal Clean Water Act to be prepared biennially and is a valuable source of water quality information. This combined report presents the extent to which New Jersey waters are attaining water quality standards, and identifies waters that are impaired. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed.

FIRM / FEMA maps indicate that the Passaic River flood plain covers a significant area (Zone A & AE) from the Morris County Boundary to the Eisenhower Parkway Interstate 280 Interchange. However, the rest of the Borough is limited to a reasonable limit around the North and South Branch of Foulerton's Brook and the Canoe Brook.

Design and Performance Standards

The Borough will adopt the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies. The design and performance standards include the language for maintenance of stormwater management measures consistent with the stormwater management rules at N.J.A.C. 7:8-5.8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins. The ordinances will be

submitted to the county for review and approval within 24 months of the effective date of the Stormwater Management Rules.

Non-structural measures to be considered first shall include site design and preventive source controls. To confirm the effectiveness of such measures, applicants must verify that control of stormwater quantity impacts as detailed in the Stormwater Management rules. The tests of assuring control of the quantity impacts as detailed in these rules have been incorporated into the Township's Stormwater Ordinance

The general standards for structural measures are specified in the Stormwater Management rules and have been incorporated into the Borough of Roseland Ordinance. These measures shall be incorporated as needed to meet the soil erosion, infiltration and runoff quantity standards included in the Borough's Stormwater Ordinance. The design standards for the specific structural stormwater management measures as those included in the New Jersey Stormwater Best Management Practices Manual. Other designs or practices may be used if they are approved by the Soil Conservation District. The design and construction of such facilities must comply with the Soil Erosion and Sediment Control Standards as well as any other applicable state regulation including the Freshwater Wetland Protection Act rules, the Flood Hazard Control rules, the Surface Water Quality Standards and the Dam Safety rules. The requirement to be consistent with all other applicable rules has been included in the Borough's Stormwater Ordinance. Stormwater runoff quality controls for total suspended solids and nutrient load shall meet the design and performance standards as specified in the Stormwater Management rules. The minimum design and performance standards for infiltration and groundwater recharge specified in the Stormwater Management Rules have been incorporated into the Borough's Stormwater Ordinance and must be met for all applicable development. Consistent with the Stormwater Management Rules, the Ordinance allows for an exemption from this requirement where the applicant can demonstrate that it is not practicable to meet the standards but has taken all possible steps to meet all stormwater management measures.

During construction, Borough inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed. Adequate long term operation as well as preventative and corrective maintenance of the selected stormwater management measures will be ensured by requiring the design engineer to prepare a maintenance plan for its stormwater management facilities incorporated into the design of the major development. The maintenance plan shall have specific preventative maintenance tasks, schedules and cost estimates as well as the responsible party for corrective and preventative maintenance.

Where the Borough assumes maintenance responsibility, preventative maintenance shall be performed on a regular basis and will be appropriate for the particular structural management measure being implemented. These maintenance measures shall be in accordance with N.J.A.C. 7:8-5 and may include: periodic inspections, vegetation management, sediment, debris and trash removal and mosquito control. Corrective maintenance shall be performed on an as needed basis for structure repairs or replacements, removal of outlet and pipe blockages, erosion restoration, snow and ice removal, etc. The person or persons responsible for maintenance shall keep a detailed log of all preventative and corrective maintenance for the

structural management measures incorporated into the design of the development, including a record of all inspections and work orders.

Plan Consistency

The Borough is not within a Regional Stormwater Management Planning Area and no TMDLs have been developed for waters within the Borough; therefore this plan does not need to be consistent with any regional stormwater management plans (RSWMPs) nor any TMDLs. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.

The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21. The municipality will utilize the most current update of the RSIS in the stormwater management review of residential areas. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates to the RSIS.

The Borough's Stormwater Management Ordinance requires all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, Township inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the local Soil Conservation District.

Nonstructural Stormwater Management Strategies

The Borough of Roseland has reviewed their ordinances, and has provided a list of the sections in the Borough land use and zoning ordinances that are to be modified to incorporate nonstructural stormwater management strategies. These are the ordinances identified for revision. Once the ordinance texts are completed, they will be submitted to the county review agency for review and approval within 24 months of the effective date of the Stormwater Management Rules. A copy will be sent to the Department of Environmental Protection at the time of submission.

The Land Development Ordinance was reviewed with regard to incorporating nonstructural stormwater management strategies. Several changes were made to incorporate these strategies.

Article 400: ZONING

Section 404 A. Residential Zones (5) Residential Cluster Option.

f. Open Space. An area or areas, shown on the development plan for the entire tract and approved by the Board, shall be dedicated irrevocably for use as common open space within the cluster residential development for the benefit of the residents of such development. *The Borough has evaluated this ordinance and will consider amending this section to encourage the use of Native Vegetation during the landscape design stages of development. The use of mulch or stone paths shall also be encouraged in order to decrease the*

impervious area typically associated with concrete as deemed appropriate by the borough engineer. This open space shall meet the provisions of Section 519 of this ordinance and the requirements of C.40:55D-43 of the MLUL.

Article 500: DESIGN

Section 506 I. Curbs.

Curbing for Borough streets shall be granite block with a 6" curb face on all streets, except on arterial streets, which shall have an 8" curb face. However, on streets under the jurisdiction of the County or State, curbing shall be in accordance with the requirements of the appropriate authority.

An alternative form of curbing may be approved by the Board if the applicant can demonstrate to the Board's satisfaction that a substantial cost savings will result and that no loss in the useful life of the curbing and no increase in the maintenance costs will occur. On private streets, the Board may waive the requirements for curbing if the applicant can demonstrate that no adverse impact will occur to the pavement, that drainage will not be impaired, and that the drainage system and facilities can easily be maintained.

The Borough has evaluated this ordinance and will consider amending this section to allow curb cuts or flush curbs with curb stops to be used to allow vegetated swales to be used for stormwater conveyance and to allow the disconnection of impervious areas as deemed appropriate by the borough engineer.

Section 506 J. Sidewalks and Aprons.

1. Sidewalks shall be installed along Borough streets in all developments in order to ensure safe pedestrian movement within the development and into adjacent areas. Additionally, sidewalks shall be installed in all areas whenever pedestrian traffic is anticipated to occur such as between parking areas and buildings or between buildings. *The Borough has evaluated this ordinance and will consider amending this section to allow sidewalks to be constructed with pervious material to re-infiltrate into the adjacent pervious areas as deemed appropriate by the borough engineer.*

Section 508 B. Design of Parking Areas.

- I. All parking and loading areas shall be curbed with granite block or concrete curbing constructed to Borough Standard specifications unless the applicant can demonstrate that elimination of curbing will not decrease the useful life of the pavement, have a negative effect on drainage, or increase maintenance costs. *The Borough has evaluated this ordinance and will consider amending this section to allow flush curbs with curb stops to be used to allow for the discharge of impervious areas into landscaped areas for stormwater management as deemed appropriate by the borough engineer.*

Section 512 D. Standards.

2. Alternatives to Detention Basins

a. It is not necessary that basic requirements be satisfied by means of detention basins. Rooftop storage, tanks, infiltration pits, dry wells, or gravel layers underneath paving, may be used for the purpose, with appropriate consideration for length of life and feasibility of continued maintenance. Vacuum street sweeping may be substituted for the water quality requirement, in cases in which continuity of the service can be assured, and where the pollution in question originates on the pavement. *The Borough has evaluated this ordinance and will consider amending this section to specify that developers use natural vegetated swales in lieu of inlets and pipes as deemed appropriate by the borough engineer.*

3. Recommended Standards for Stream Corridor Protection. To the extent practicable and consistent with other site planning criteria, and with appropriate beneficial use of the site as a whole, it is recommended that no alteration of the natural terrain should occur and no impervious surfaces should be located, within a stream corridor. The corridor should include all floodplain areas, adjacent slopes of 12% or greater, and contiguous areas where the depth of the seasonal high water table is one foot or less. *The Borough has evaluated this ordinance and will consider amending this section so that restrictive conservation easements can be placed on all buffered areas as deemed appropriate by the borough engineer.*

Section 516 Landscaping, Shade Trees and Buffers

G. Forests. *The Borough has evaluated this ordinance and will consider amending this section to enhanced the preservation of trees to maintain the benefits of a forested area, such as the associated leaf litter or smaller vegetation that provides additional water quality and quantity benefits as deemed appropriate by the borough engineer.*

Land Use/Build-Out Analysis

The Borough of Roseland does not have a combined total of greater than one square mile of vacant or agricultural lands. Therefore Roseland is not required to complete a build out analysis.

Mitigation Plan

The Borough of Roseland, over the past 15 years has not granted a variance or a waiver from their municipal stormwater ordinance and will continue this practice. However as a matter of completeness the following Mitigation Plan is provided.

This mitigation plan is provided for a proposed development that is granted a variance or exemption from the stormwater management design and performance standards. Presented is a hierarchy of options. The applicant is required to propose a mitigation project that meets the

requirement of item 1 below as the first option. If the applicant is unable to identify a suitable project that meets the requirements of item 1, as determined by the Borough of Roseland, then the applicant must propose a project that meets the requirements of either item 2 or item 3 below. All mitigation projects proposed by an applicant must be approved by the Borough of Roseland prior to implementation.

Mitigation Project Criteria

1. The mitigation project must be implemented in the same drainage area as the proposed development. The project must provide additional groundwater recharge benefits, or protection from stormwater runoff quality and quantity from previously developed property that does not currently meet the design and performance standards outlined in the Municipal Stormwater Management Plan. The developer must ensure the long-term maintenance of the project, including the maintenance requirements under Chapters 8 and 9 of the NJDEP Stormwater BMP Manual.
2. If a suitable site cannot be located in the same drainage area as the proposed development, the mitigation project may provide mitigation that is not equivalent to the impacts for which the variance or exemption is sought, but that addresses the same issue.
3. The Borough may allow a developer to provide funding or partial funding for an environmental enhancement project. The funding must be equal to or greater than the cost to implement the mitigation outlined above, including costs associated with purchasing the property or easement for mitigation, and the cost associated with the long-term maintenance requirements of the mitigation measure.



BOROUGH of ROSELAND

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