BOROUGH OF NETCONG
MORRIS COUNTY, NEW JERSEY

MUNICIPAL STORMWATER MANAGEMENT PLAN

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Appendices:

1.0 INTRODUCTION

This document has been prepared in accordance with the New Jersey Department of Environmental Protection (herein referred to as NJDEP) *Tier A Municipal Stormwater Guidance Document* dated October, 2018, and the *New Jersey Stormwater Best Management Practices (BMP) Manual*, dated April 2004 revised September 2014, February 2016, September 2016, November 2016, September 2017, & March 2020 in order to document Netcong Borough's strategy to address and reduce stormwater runoff and related non-point source pollution impacts. It is important to note that this plan will require several updates. Netcong Borough must reexamine the Stormwater Management Plan at each reexamination of the Borough's Master Plan in accordance with N.J.S.A 40:55-D89.

1.1 How Does Stormwater Runoff Affect Us?

Figure 1

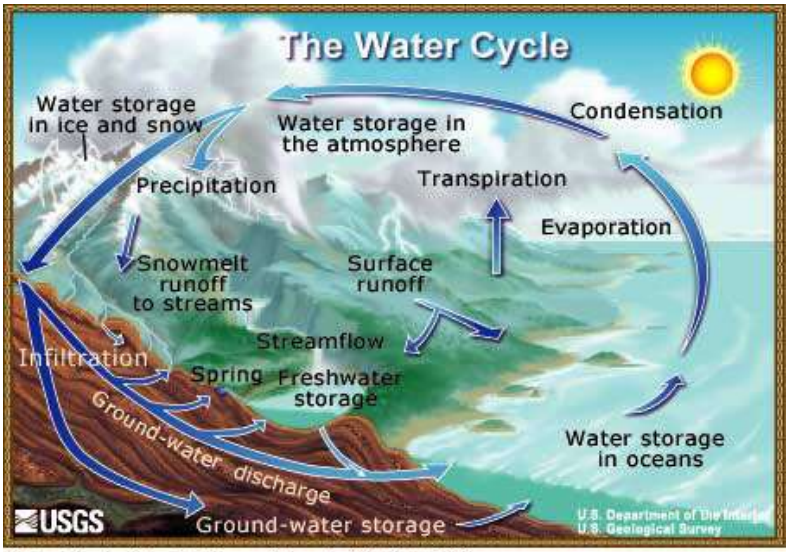


Illustration by John M. Evans, Colorado District, USGS

Stormwater runoff is one of the largest detrimental impacts to our nation's water resources and is a major component of non-point source pollution. It is estimated that up to 60 percent of existing water pollution problems are attributable to non-point source pollution. Non-point source pollution, and particularly, stormwater runoff is difficult to identify, control, and treat. In natural environments, those undisturbed by anthropogenic activities, native vegetation either directly intercepts precipitation or draws from runoff that has infiltrated into the ground and returns it to the atmosphere through the process of evapotranspiration. A portion of precipitation runs off the land's surface replenishing the surface waters. Further, a portion of the rainfall that lands on the ground's surface infiltrates through the soil to the groundwater table and provides natural recharge of the groundwater and either replenishes aquifers or provides baseflow to rivers and streams. This process, known as the hydrologic cycle (or water cycle), functions in equilibrium, but is extremely susceptible to impacts resulting from changes to the cycle's processes. The hydrologic cycle is illustrated on Figure 1.

It has been shown that development can dramatically impact the hydrology of a watershed if stormwater runoff related impacts are not considered carefully. Development typically alters natural vegetation through replacement of forests and fields with lawns, impervious cover, and motor vehicle surfaces, thereby reducing the

watershed's evaporation, transpiration and infiltration rates. Construction activities compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. In the past, development typically involved the construction of impervious areas connected to each other through gutters, channels, and storm sewers. These structures can transport runoff more quickly than natural surfaces and cause erosion, water quality and flooding problems in areas downstream of development. Many times, the general public does not know or understand that there are alternatives to the traditional way of managing *improved* properties. For example, homeowners can have a green lawn without excessive doses of fertilizers and pesticides; pet owners should collect and properly dispose of pet waste and not leave it at the curb. Typically, people are unaware that storm drains often discharge directly to waterbodies. When people allow motor oil, trash, and their pet's waste to enter the storm sewer in their street, they don't realize that it may end up in Lake Musconetcong, the Muscontcong River or its tributaries, or their public drinking water supply. Individually these acts may seem insignificant, but the cumulative impacts of these activities contribute to stormwater runoff non-point source pollution, and thus reduce water quality.

1.2 Municipal Separate Stormwater Systems (MS4) Program

In response to the United States Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) Phase II regulations adopted in December 1999, the State of New Jersey developed the Municipal Stormwater Regulation Program. This program addresses pollutants entering our waters from storm drainage systems operated by local, county, state, interstate, and federal government agencies. These systems are referred to as "municipal separate storm sewer systems" or MS4s and are regulated under the New Jersey Pollutant Discharge Elimination System (NJPDES) Rules (N.J.A.C. 7:14A). The NJDEP created four (4) NJPDES Stormwater General Permits for the various Municipal Separate Storm Sewer System (MS4s). These general permits include the Tier A Municipal Stormwater General Permit, Tier B Municipal Stormwater General Permit, Public Complex Stormwater General Permit, and the Highway Agency Stormwater General Permit.

For each General Permit, NJDEP has mandated Statewide Basic Requirements (herein referred to as SBRs), which include minimum standards, measurable goals, and implementation schedules. The minimum standards are one or more actions that must be taken to comply with the requirement of the permit. The measurable goals are the mechanism for reporting to the NJDEP the progress that the Municipality has made to implement the requirements of the permit and are accomplished primarily through the submittal of an Annual Report and Certification. The implementation schedule sets the deadlines for permit compliance.

All municipalities within the State of New Jersey have been classified as either Tier A or Tier B communities depending on population density as determined in the 2000 United States Census. Netcong Borough is regulated under the NJPDES Stormwater Tier A General Permit, NJPDES No. NJ0141852, with the unique NJPDES permit number of NJG0151084 assigned to the Borough of Netcong. Tier A Municipalities are generally

located within the more densely settled regions of the State or along or near the Atlantic Ocean.
As part of the permit, several SBRs were mandated and implemented. To satisfy the permit requirements, each Tier A municipality is required to develop, implement, and enforce a Stormwater Program. In addition, Tier A municipalities are required to prepare and implement a Stormwater Pollution Prevention Plan (SPPP) that describes the stormwater program and serves as the mechanism for the implementation of the SBRs.

The following SBRs apply to all Tier A municipalities, including Netcong Borough.

1. **Minimum Standards for Public Involvement and Participation Including Public Notice** – Municipalities must comply with State and local public notice requirements when providing for public participation in the development and implementation of their stormwater program. Municipalities must make elements of the MS4 program available to the public upon request and post copies of the SPPP, MSWMP & related ordinances on the municipal website. The Municipality shall maintain records necessary to demonstrate compliance with the public participation requirements and the existing permittee shall meet the minimum standards of this permit, and the measurable goals.

2. **Minimum Standards for Local Public Education** – Each municipality shall develop a local public education program that focuses on educational and pollution prevention activities about the impacts of stormwater discharges on surface water and groundwater and to involve the public in reducing pollutants in stormwater and mitigating flow. The activities must total 12 points and include activities from at least three of the five categories set forth in Attachment B of the Tier A permit

    a. The municipality shall label all storm drain inlets for those drains that do not have permanent wording cast into the structure of the inlet. These labels shall be maintained.

    b. The municipality shall advertise public involvement programs pertaining to education and outreach activities on the municipality's website, through a mailing, a newspaper advertisement, or similar.

3. **Minimum Standards for Construction Site Stormwater Runoff** – Construction site stormwater runoff activities are authorized under separate NJPDES permit. These are not required to be referenced in the SPPP.

4. **Post Construction Stormwater Management in New Development and Redevelopment** – Municipalities shall develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that discharge into the municipality's small MS4.

In its post construction program, the municipality shall complete the following:

a. Adopt and reexamine a municipal stormwater management plan (or adopt amendments to an existing municipal stormwater management plan) in accordance with N.J.A.C. 7:8-4.

b. Adopt and implement a municipal stormwater control ordinance or ordinances in accordance with N.J.A.C. 7:8-4. The ordinance(s) will control stormwater from non-residential development and redevelopment projects.

c. Ensure that any residential development and redevelopment projects that are subject to the Residential Site Improvement Standards (RSIS) for stormwater management (N.J.A.C. 5:21-7) comply with those standards (including any exception, waiver, or special area standard that was approved under N.J.A.C. 5:21-3).

d. Where necessary to implement the municipal stormwater management plan, the municipal stormwater control ordinance(s) will also:

    i. Control aspects of residential development and redevelopment projects that are not pre-empted by the RSIS; and

    ii. Set forth special area standards approved by the Site Improvement Advisory Board for residential development or redevelopment projects under N.J.A.C. 5:21-3.5.

e. Ensure adequate long-term operation and maintenance (O&M) of Best Management Practice (BMPs).

f. Enforce, through stormwater control ordinance(s) or a separate ordinance, compliance with standards set forth in Attachment C of the permit to control passage of solid and floatable materials through storm drain inlets.

g. Require compliance with the applicable design and performance standards established under N.J.A.C. 7:8 for major development, unless:

    i. Those standards do not apply because of a variance or exemption granted under N.J.A.C. 7:8; or

    ii. Alternative standards are applicable under an area-wide or Statewide Water Quality Management Plan adopted in accordance with N.J.A.C. 7:15.

5. Minimum Standards for Pollution Prevention/Good Housekeeping for Municipal Operator

a. Each municipality shall adopt and enforce the following community wide ordinances to address improper disposal of waste
    i. Pet Waste – Requires pet owners or their keepers to immediately and properly dispose of their pet's solid waste deposited on their property or any other property, public or private, not owned or possessed by that person.
    ii. Wildlife Feeding – Prohibits the feeding in any public park or on any other property owned or operated by the municipality of any wildlife (excluding confined wildlife in zoos, parks, or rehabilitation centers or unconfined wildlife at educational centers).
    iii. Litter – Adopt and enforce a litter ordinance or enforce the existing State litter statute (N.J.S.A. 13:1E-99.3).
    iv. Improper Disposal of Waste – Prohibits the improper spilling, dumping, or disposal of materials other than stormwater into the small MS4.
    v. Containerized Yard Waste Ordinance / Collection Program – Prohibits placing non-containerized yard wastes in the street and/or the municipality shall develop a yard waste collection and disposal program.
    vi. Private Storm Drain Inlet Retrofitting Ordinance

b. Each municipality shall develop and continue to implement the following community wide pollution prevention/good housekeeping measures to control solids and floatables:

    i. Street Sweeping – Municipalities shall sweep all municipally owned curbed streets with storm drains that have a posted speed limit of 35 miles per hour (mph) or less in predominantly commercial areas at a minimum of once each month and that are not entrance or exist ramps.

    ii. Catch Basin & Storm Drain Inlet Inspection – Municipalities are required to inspect and clean storm drain inlets once every five years, or more frequently.

    iii. Storm Drain Inlet Retrofit - Municipalities are required to retrofit any existing municipal owned storm drain inlet in direct contact with any repaving, repairing, or resurfacing or in direct contact with any reconstruction or alterations of facilities.

c. Maintenance Yard Operations (Including Maintenance Activities at Ancillary Operations) – Tier A Municipalities are required to implement the best management practices described in Attachment E of the Tier A permit for municipal maintenance yards and ancillary operations which include the following:

   i. Fueling Operations
   ii. Discharging of Stormwater from Secondary Containment
   iii. Vehicle Maintenance
   iv. On-Site Equipment and Vehicle Washing and Wash Wastewater Containment
   v. Salt and de-icing Material Storage
   vi. Aggregate Material and Construction Debris Storage
   vii. Street Sweepings, Catch basin clean out, and other material storage
   viii. Yard Trimmings and Wood waste Management Sites
   ix. Containment of vehicle wash water
   x. Roadside Vegetation Management

d. Employee Training – Each Tier A municipality shall develop and conduct an annual employee training program. All employees shall receive training on these stormwater topics within three months of commencement of duties and every two years thereafter. Records should be kept and certified annually. The program must include at minimum the following topics:
   i. Yard Waste Collection Program
   ii. Monthly Sweepings of Certain Streets in Predominantly Commercial Areas
   iii. Illicit Connection Elimination and Outfall Pipe Mapping
   iv. Outfall Pipe Stream Scouring Remediation
   v. Maintenance Yard operations
   vi. Waste Disposal Education
   vii. Municipal Ordinances
   viii. Stormwater Facility Maintenance
   ix. Construction Activity/Post-Construction Stormwater Management in New Development and Redevelopment
   x. Tier A Municipalities SPPP
   xi. Other stormwater related topics

e. Stormwater Management Design Review Training - Each Tier A municipality shall ensure that all design engineers, municipal engineers, and other individuals that review the stormwater management design for development and redevelopment projects complete the Department approved Stormwater Management Design Review Course once every five years.

f. Municipal Board & Governing Body Member Related Training - Each Tier A municipality shall ensure that all municipal board and governing body members that review and approve applications for development and redevelopment projects complete the required online training available on the NJDEP website within six months of commencing duties.

6. Minimum Standards for MS4 Outfall Pipe Mapping and Illicit Discharge and Scouring Detection and Control – Each Tier A Municipality must complete the following requirements:

a. Develop a map showing the end of all MS4 outfall pipes that are operated by the Municipality, and discharge within the municipality's jurisdiction to a surface water body. The map shall show the location and name of all surface water bodies receiving discharges and each pipe shall be assigned an alphanumeric identifier. A copy of the map shall be provided to the NJDEP annually if revisions have been made. Electronic submission is required by December 21, 2020.

b. Develop and implement a program to detect, investigate, and control any localized stream scouring from stormwater outfall pipes. The program, at minimum, must include an initial inspection of all outfall pipes once every five years, and all new pipes. When scour is detected, they should be further investigated, prioritized, scheduled, and remediated.

c. Each municipality shall adopt and implement a program to detect and eliminate illicit connections into the MS4. The program, at minimum, must include an initial inspection of all outfall pipes, and further investigate any found to have dry weather flow in accordance with Permit A requirements. After the completion of the initial inspection of all outfall pipes, Tier A municipalities shall maintain an ongoing program to detect and eliminate illicit connections.

7. Minimum Standards for Stormwater Facility Maintenance –Develop and implement a stormwater facility maintenance program for cleaning and maintaining all stormwater facilities in accordance with permit requirements.

a. Maintenance must be performed pursuant to any maintenance plans or more frequently as needed

b. A maintenance log shall be maintained to demonstrate compliance

c. Must certify annually that municipal owned or operated stormwater facilities are property functioning.

d. Develop and implement a program to ensure adequate long-term cleaning, operation, and maintenance of stormwater facilities not owned or operated by the Tier A Municipality not subject to the conditions of another NJPDES stormwater permit and constructed after February 7, 1984.

8. Minimum Standards for Total Maximum Daily Load (TMDL) Information – Each Tier A Municipality must incorporate the TMDL information into the SPPP and annually review approved or adopted TMDL reports. These reports should also be used to prioritize stormwater facility maintenance including schedules for repairs required.

1.3 Stormwater Management Regulations

On February 2, 2004 the State of New Jersey adopted the revised Stormwater Management Rules (N.J.A.C. 7:8). The revisions to the State's Stormwater Management Rules serve as the first major update to the rules since their inception in 1983 and detail fundamental changes in the management of stormwater runoff in New Jersey. Through the revision of these rules other regulations were modified, including the Residential Site Improvement Standards (RSIS) (N.J.A.C. 5:21), the Freshwater Wetlands Protection Act (N.J.A.C. 7:7A), the Flood Hazard Area Control Act (N.J.A.C. 7:13), the Watershed Management Rules (N.J.A.C. 7:15), and the New Jersey Dam Safety Standards (N.J.A.C. 7:20). The Stormwater Management Rules were most recently amended on March 2, 2020.

The Stormwater Management Rules provide a framework and incentives for managing runoff and resolving non-point source impairment on a drainage area basis for new development, redevelopment and existing developed areas. Additionally, they establish a hierarchy for implementation of BMP stormwater management measures with initial reliance on low impact development (LID) site design techniques to maintain natural vegetation and drainage patterns before incorporating structural measures. These rules also establish runoff control performance standards for groundwater recharge, water quality, and water quantity, establish special protection area measures for pristine and exceptional value waters; provide regulatory consistency among local and State regulatory agencies; and provide safety standards for stormwater management basins.

As of February 2, 2004, the design requirements identified in the Stormwater Management Rules including groundwater recharge, water quality and water quantity must be met for all projects regulated under RSIS. The Stormwater Rules (N.J.A.C. 7:8-

4) require that all municipalities within the State of New Jersey adopt a municipal Stormwater Management Plan.

The Department adopted amendments to the Stormwater Management rules , N.J.A.C. 7:8, on March 2, 2020, to replace the current requirement that major developments incorporate nonstructural stormwater management strategies to the "maximum extent practicable" to meet groundwater recharge standards, stormwater runoff quantity standards, and stormwater runoff quality standards, with a requirement that green infrastructure (GI) be utilized to meet these same standards. The adopted amendments clarify and modify the definition of major development, which defines the scope of projects to which these rules apply. The Department adopted changes to apply the total suspended solids (TSS) removal requirement to the runoff from motor vehicle surfaces and to eliminate the TSS removal requirement as it applies to runoff from other impervious surfaces not traveled by automobiles, such as rooftops and sidewalks. The Department also adopted several changes that will improve water quality and stormwater management improvements in communities with combined sewer systems.

2.0 STORMWATER MANAGEMENT PLAN GOALS

Minimum goals for the municipal stormwater management plans for Tier A communities in the NJDEP Guidance Document are listed as follows:

- 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 non-point pollution;
- Maintain the integrity of stream channels for their biological functions, as well as for drainage;
- Minimize pollutants in stormwater runoff from new and existing development in order to restore, enhance and maintain the chemical, physical, and biological integrity of the waters of the State, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water;
- Protect public safety through the proper design and operation of stormwater management basins.

In addition to the minimum goals required by NJPDES General Permit, in accordance with the Netcong Borough Master Plan, the following goals are set forth in this Stormwater Management Plan:

- Establish a balance of residential and nonresidential uses so as to provide a full range of services as well as residential opportunities to the residents of Netcong Borough.
- Provide safe and convenient access to all areas of the Borough.
- Provide adequate sewerage and water services throughout the Borough so as to protect the public health and surface and groundwater quality.
- Provide a range of year-round recreation activities for residents of the Borough.

- Protect environmentally sensitive lands from the impacts of development.

- Ensure that new development within the community be designed with the environmental resources of the borough in mind.

To achieve the above 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 specific design standards for stormwater infrastructure to protect public safety.

3.0 BACKGROUND

3.1 Municipal Background

Netcong Borough encompasses an area of 0.96 square miles (0.13 square miles is open water within the Borough Municipal limits) located in Morris County. Netcong Borough is located in northwestern Morris County, abutting Sussex County to the north. The Borough lies along the western and southern shores of Lake Musconetcong. Netcong Borough is bordered by Mount Olive Township and Roxbury Township in Morris County, and Stanhope Borough in Sussex County.

There was significant growth within the municipality in the 1970's. This was primarily due to the construction of the Netcong Heights Apartment Complex during that time period. This development caused a 24.5 percent increase in the population between 1970 and 1980. Since that growth spurt, the municipal population has stabilized and actually a 22 percent reduction in borough's population between 1990 and 2000 was ascertained based on the 2000 census. Table 3.1 indicates population trends within Netcong Borough between 1920 and 2010.

Table 3.1
Netcong Borough Census Data

2010	3,232
2000	2,580
1990	3,311
1980	3,557
1970	2,858
1960	2,765
1950	2,284
1940	2,157
1930	2,097
1920	1,800
1910	1,532
1900	941

Source: U.S. Census

There are approximately 1,008 households in Netcong, the majority of which are single family homes. Land use within the Borough is primarily a mixture of residential development with some industrial development primarily confined to the western end of the municipality. The commercial establishments, which support the residential contingent of the municipality, are generally located along the Route 46 and Route 183 (Ledgewood Avenue) corridors. There is an area in the vicinity of Main Street and the Netcong Railroad Station which has been designated by the Borough as a redevelopment area. Due to the small size of the municipality and the limited areas remaining for new development, there should be no significant changes in the landscape which would cause increased stormwater runoff volumes and pollutant loads to the waterways of the municipality.

All drinking water within the Borough is obtained from groundwater wells of varying depths. The Netcong Public Community Water System includes four wells. Netcong also has a emergency water connection with Stanhope Borough. The entire municipality is serviced by this water system.

3.2 Environmental Resources Summary

Topography

Netcong Borough is characterized by rolling and hilly terrain. The highest point is at the southeasterly corner of the Netcong Heights Garden Apartment Complex with an elevation of approximately 1100 feet above sea level. The lowest elevation being along the Musconetcong River at the northwesterly corner of the Borough with an elevation of approximately 780 feet. The Borough defines excessive slopes as those with a slope of 20% or greater. There is only one undeveloped area with excessive slopes within the Borough and this lies south of Main Street (Route 46) between Flanders Road and Church Street. Other areas of excessive slope existing within the Borough in already developed areas including between Allen Street and College Road, and parts of the Netcong Heights Garden Apartment Complex.

Surface Water

New development and subsequent changes in the Borough's landscape as well as in surrounding municipalities has resulted in considerable demand and have most likely increased stormwater runoff volumes and pollutant loads to the waterways of the municipality. Netcong Borough is located within the Musconetcong River Watershed, which includes Lake Musconetcong, and the Musconetcong River and as well as a number of smaller tributaries and intermittent streams. The NJDEP has designated a special level of protection, known as Category One (C1), for certain waterbodies. The C1 designation provides additional protections to waterbodies that help prevent water quality degradation and discourage development where it would impair or destroy natural resources and environmental quality. The stormwater rules emphasizes special buffer-area protections for C1 waterbodies. While portions of the Musconetcong River and its tributaries are designated as C1 Waters, the portion of this river from the Lake Hopatcong Dam to the Delaware River which includes the portion of the river which traverses Netcong Borough is designated as FW2-TM.

The NJDEP has established an Ambient Biomonitoring Network (AMNET) to document the health of the State's waterways. There are over 800 AMNET sites throughout 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. Lake Musconetcong, and the Musconetcong River have been designated as FW2-TM waters. FW2-TM waters are those recognized by the state as suitable for trout maintenance.

3.3 Water Quality Issues

Non-point source pollution has emerged as a public issue in New Jersey, and in response to Section 319 of the Clean Water Act, the State has developed a Non-point Source Assessment and Monitoring Program (NJDEP, 1989). As part of that process, New Jersey's existing non-point source pollution problems were identified and an assessment of waterbodies potentially affected by non-point sources was conducted. The Upper Musconetcong River Watershed, was identified as an area suspected of having received significant impacts from non-point source pollution. These findings are consistent with earlier studies of Lake Hopatcong (1984) and Lake Musconetcong (1990) conducted through the U.S. Environmental Protection Agency (USEPA) Clean Lakes Program (Section 314).

In 1995, the *Regional Non-Point Source Pollution Control Management Plan for the Upper Musconetcong River Watershed* was prepared for the NJDEP by the Lake Musconetcong and Lake Hopatcong Regional Planning Boards in conjunction with Princeton Hydro, LLC. This study focused on identifying and quantifying pollutant loadings from non-point sources. This study also developed management recommendations for the headwaters portion of the Upper Musconetcong River. The Musconetcong River is recognized as being impacted by stormwater runoff. Smaller tributaries located in the headwaters of the Musconetcong River Watershed, notably Beaver Brook and Mountain Brook, have also experienced increased pollutant loading as a result of the development of their respective sub-watersheds. This is reflected in the water quality data compiled over the past 15 years as part of the monitoring efforts at Lake Hopatcong (Princeton Hydro, 1995)

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. 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 Total Maximum Daily Loads (TMDLs) are needed. Lake Musconetcong was listed as Sublist 5 waterbodies in the June, 2002 Integrated Water Quality Monitoring and Assessment Report. Lake Musconetcong did not meet the water quality standards for nutrient/sedimentation.

In response to the June 2002 Integrated Water Quality Assessment, the State of New Jersey completed a TMDL analysis of the Upper Musconetcong River watershed. The TMDL focused primarily on phosphorus, which is typically the primary nutrient that limits algal and aquatic plant growth. Phosphorus has also been identified by the State, under the 303(d) program, as one of the parameters responsible for the documented impairment of Lake Hopatcong and Lake Musconetcong (NJDEP, 2003a). Thus, the TMDL analysis for the two major waterbodies within the Upper Musconetcong River watershed focuses on phosphorus (Princeton Hydro, 2005).

The completion and acceptance of the phosphorus TMDL resulted in the delisting of Lake Musconetcong on the New Jersey 2004 Integrated Water Quality Monitoring and Assessment Report to Sublist 4a for phosphorus (formerly listed as nutrients/sedimentation). Former Sublist 5 Waterways are delisted to Sublist 4a once all TMDL(s) have been developed and approved by EPA that, when implemented, are expected to result in full attainment of the standard.

3.4 Existing Stormwater Infrastructure

The primary mode of stormwater conveyance in the Borough is through a subsurface storm drainage system consisting of catch basins, inlets, manholes, storm drains, and culverts. Stormwater runoff is collected by the catch basins and inlets and transported through the storm drains and culverts to a location where the stormwater discharges. Many of the storm drains and culverts associated with the drainage system in the Borough are undersized. Netcong Borough has a total of 27 municipal stormwater outlets that discharge mostly into Lake Musconetcong. The Borough will be assessing the condition of these structures as directed in the Borough's Stormwater Pollution Prevention Plan.

3.5 Water Quality Issues

Water quality is within the Borough is significantly impacted by flooding and erosion. Significant portions of the Borough's infrastructure is undersized and in poor condition. The Borough is improving its infrastructure on a priority basis.

4.0 DESIGN AND PERFORMANCE STANDARDS

To prevent or minimize water quality impacts, the Borough has developed, implemented, and enforces a program to address stormwater runoff from new development and redevelopment projects (including projects operated by the municipality itself) that disturb one acre or more, including projects less than 1,500 square feet that are part of a larger common plan of development or sale, that discharge into the municipality's MS4.

The Borough has adopted 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.

A copy of the Borough's Stormwater Control Code is included in Appendix A of this report.

The Borough will continue to enforce the stormwater control ordinance. The Borough will ensure adequate long-term operation and maintenance of BMPs on property not owned or operated by the municipality; and the Borough will enforce, through the stormwater control ordinances, controlling the passage of solid floatable materials through storm drain inlets for storm drain inlets not installed by the Tier A Municipality.

During construction, Borough inspectors will continue to observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed.

The Borough will comply with the applicable and meet several different but related requirements. These requirements are concerned with:

- The Department's Stormwater Management rules (N.J.A.C. 7:8), which are implemented in part through the Residential Site Improvement Standards: govern the contents of municipal stormwater management plans and stormwater control ordinances, and establish stormwater management design and performance standards for new development and redevelopment.

- The Residential Site Improvement Standards (RSIS) for stormwater management established by the New Jersey Department of Community Affairs (NJDCA) at N.J.A.C. 5:21.

- Municipal stormwater management plans and stormwater control ordinances adopted under the Stormwater Management Act (N.J.S.A. 40:55D-93 to 99), which is a portion of the Municipal Land Use Law (N.J.S.A. 40:55D-1 et seq.)

- Long-term operation and maintenance of BMPS.

- Storm drain inlets.

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

The requirements in N.J.A.C. 7:8-5.2 AND 5.3 to incorporate the following nonstructural stormwater management strategies into the design.

- Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss;

- Minimize impervious and motor vehicle surfaces and break up or disconnect the flow of runoff over impervious and motor vehicle surfaces;

- Maximize the protection of natural drainage features and vegetation;

- Minimize the decrease in the "time of concentration" from pre-construction to post-construction. "Time of Concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the drainage area to the point of interest within a watershed;

- Minimize land disturbance including clearing and grading;

- Minimize soil compaction;

- Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides;

- Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas; and

- Provide other source controls to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into stormwater runoff (see N.J.A.C. 7:8-5.3(a)9 and the New Jersey Stormwater Best Management Practices Manual for examples).

March 2020 Amendments to the Stormwater Management Rules, N.J.A.C. 7:8, propose the use of green infrastructure to replace the current requirement to incorporate nonstructural stormwater management strategies to the "maximum extent possible". The selection of green infrastructure BMPs to incorporate into a project should be selected based on a review of the site characteristics and needs. The following green infrastructure structural Best Management Practices should be considered for each project in accordance with N.J.A.C. 7:8-9.

- Bioretention systems;
- Constructed stormwater wetlands;
- Dry wells;
- Extended detention basins;
- Infiltration basins;
- Pervious paving systems;
- Rooftop vegetated cover;
- Sand filters;
- Vegetative filters; and
- Wet ponds.

The standard in N.J.A.C. 7:8-5.5 to encourage and control infiltration and groundwater recharge, including requirements that the design engineer (except in certain specified circumstances) either:

- Demonstrate through hydrologic and hydraulic analysis for stormwater leaving the site, post-construction runoff hydrographs for the two-, 10- and 100-year storm events do not exceed the pre-construction runoff hydrographs for the same storm events; **or**

- Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the two-year storm is infiltrated.

- The "Stormwater runoff quality standards" in N.J.A.C. 7:8-4, including:

    □ The requirement that stormwater management measures be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed site, expressed as an annual average. Table 4-1 in N.J.A.C. 7:8-4 presents the presumed TSS removal rates for certain BMPs designed in accordance with the New Jersey Stormwater Best Management Practices Manual.

    □ The requirement that stormwater management measures be designed to reduce, to the maximum extent feasible, the post-construction nutrient load of the anticipated load from the developed site in stormwater runoff generated from the water quality design storm.

- The requirement that the applicant preserve and maintain 300-foot "special water resource protection areas" along all waters designated "Category One" in the Department's Surface Water Quality Standards at N.J.A.C. 7:9B, and along perennial or intermittent streams that drain into or upstream of the Category One waters as shown on the U.S. Geological Survey (USGS) Quadrangle Maps or in the County Soil Surveys, within the associated hydrologic unit code 14 (HUC14) drainage. The Borough currently does not have a Category One waters within the municipal boundary.

- The maintenance requirements in N.J.A.C. 7:8-5.8

The requirements for "compliance with the applicable design and performance standards established under N.J.A.C. 7:8" pertains to all applicable design and performance standards established under the Stormwater Management rules, not just to the "Stormwater Management Quantity and Quality Standards" in N.J.A.C. 7:8-5. Problems such as human-induced base-flow reduction (due to reduced recharge) and exacerbation of flooding and erosion also present water quality problems because they alter the chemical, physical, or biological integrity of the waters of the State, or otherwise contribute to water pollution.

5.0 PLAN CONSISTENCY

There are no regional stormwater management plans within the municipality and as such there is no concern regarding consistency. Should a regional stormwater management plan affecting the municipality be prepared and adopted in the future, this plan will be modified as necessary to be maintain consistency.

Lake Musconetcong Regional Planning Board was established by the four communities and two counties surrounding the lake with a goal of protecting the lake from eutrophication. This board acts in an advisory capacity providing guidance regarding developmment and stormwater management issues to the land-use boards in each of the member municipalities. The Board has taken an active role in trying to maintain and upgrade the lake through dredging projects and weed harvesting. It is the intent of Netcong Borough to continue to work with this board in an effort to improve the quality of Lake Musconetcong. While the Musconetcong Regional Planning Board currently has no Regional Stormwater Management Plan, the borough recognizes the value of this water body to the municipality and as such should one be developed, the Borough will update this municipal stormwater management plan to insure consistency with any plan developed for the lake.

A TMDL has been established for phosphorus concentrations in Lake Musconetcong in a report entitled "Amendment to the Upper Delaware Water Quality Management Plan, Northeast Water Quality Management Plan, Upper Raritan Water Quality Management Plan and Sussex County Water Quality Management Plan - Total Maximum Daily Loads for Phosphorus to Address 4 Eutrophic Lakes in the Northwest Region". This report indicates that a Lake Restoration Plan will be developed for Lake Musconetcong which will consider in-lake measures that need to be taken to restore the lake to an ecologically sate condition. Addition information regarding the New Jersey Integrated Water Quality Monitoring and Assessment Report can be obtained by contacting the NJDEP's Water Assessment Team in the Water Monitoring and Standards Element at (609) 292-1623.

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

6.0 NONSTRUCTURAL STORMWATER MANAGEMENT STRATEGIES

The Borough has reviewed the Master Plan, Official Map and Ordinances to incorporate nonstructural stormwater management strategies. The Borough has revised all ordinances which relate to land development and incorporate NJDEP's nonstructural stormwater management strategies.

Also, if a developer is given a variance to exceed the maximum allowable percent imperviousness, the developer must mitigate the impact of the additional impervious and motor vehicle surfaces. This mitigation effort must address water quality, flooding, and groundwater recharge.

It is noted that although attempts to mimic pre-existing natural conditions may be adequate to satisfy the State stormwater rules, alteration of land always modifies hydrology. Therefore, some measure (or BMP) will be required for every project qualifying as a major development. The New Jersey Stormwater Best Management Practices Manual ("BMP Manual") April 2004 Revised September 2014, February 2016, September 2016, November 2016, September 2017,November 2018, & March 2020 should be utilized for the development of all stormwater BMPs. A copy of the most current BMP manual can be found at: https://www.njstormwater.org/bmp_manual2.htm

7.0 LAND USE/BUILD-OUT ANALYSIS

There are four steps to preparing a build-out analysis that satisfies the requirements for a municipal stormwater management plan:

1. Determine the total land area within each of the HUC14s of the municipality.

2. Determine the area of constrained lands within each HUC14 of the municipality.

3. Determine the land available for development by simply subtracting the constrained lands from the total land area for each HUC14. In essence, the land available within each HUC14. Existing residential, commercial, and industrial areas are also eligible for redevelopment and should be considered as land available for development.

4. For each HUC14, complete a build-out analysis by using the municipal zoning map and applicable ordinances to determine the acreage of new development. Once the build-out acreage of each land use is determined for each HUC14, nonpoint source loadings can be determined for the build-out scenario. Shown below are examples of build-out analyses for two HUC14s located in the municipality.

A detailed land use/build out analysis for the Borough can be found in Appendix B of this report.

8.0 MITIGATION PLAN

This mitigation plan is provided for a proposed development that is granted a variance or exemption from the stormwater management design and performance standards. 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.

If a suitable site cannot be located in the same drainage area as the proposed development as discussed above, 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. For example, if a variance is given because the 80 percent TSS requirement is not met, the selected project may address water quality impacts.

The Borough may allow a developer to provide funding or partial funding to the municipality for an environmental enhancement project that has been identified in an addendum to this Municipal Stormwater Management Plan or towards the development of a Regional Stormwater Management Plan. 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. In those cases where an applicant has demonstrated the inability or impracticality of strict compliance with the stormwater management requirements set forth in this plan, and in N.J.A.C. 7:8-5, a waiver from strict compliance may be granted by Netcong Borough. In such cases, the applicant must submit a mitigation plan detailing how the project's failure to strictly comply will be compensated.

A mitigation plan must identify measures required to offset any potential impact(s) created by the granting of the waiver. For example, because of natural site constraints, a proposed development might be unable to fully meet the groundwater recharge criteria, with the projected impact being an annual net loss of 50,000 cubic feet of groundwater recharge volume. In this case, a mitigation plan might require recovery of the lost recharge volume by capturing existing runoff from an impervious area on a site within the same drainage basin. Applicants may identify potential properties suitable for the mitigation project, secure the easements necessary to implement the projects and ensure long-term maintenance requirements are met.

Strategies that may be used to mitigate a development project and its impacts include, in the order of their preference, the following:

1. **Equivalent, or "in-kind"** mitigation (as per the requirements of N.J.A.C. 7:8-4.2c(11)) is the most preferred method where a mitigation project is identified

within the same drainage area, or HUC-14, within which the subject project is proposed, so that it provides benefits and protection similar to those that would have been achieved if the stormwater and recharge performance standards had been satisfactorily completed. In-kind mitigation must also directly compensate for the projected impact for the performance standard(s) for which the waiver was granted.

If there are no "in-kind" mitigation options available within the same HUC-14 drainage area, the Borough may consider implementation of a similar compensating measure to mitigate the same impact(s) of the proposed project, but within a different watershed.

2. **Non-equivalent, or alternative** mitigation options may be considered by the Borough if equivalent or "in-kind" mitigation measures for the projected environmental impact(s) is not feasible. In this case, the Borough may consider implementation of an alternative compensating measure at a designated municipal site or as part of an adopted regional stormwater management plan.

3. **Funding, or "in-lieu"** mitigation is the least preferred option. In this case, an applicant may provide contributions in the form of funding to the Borough for future or alternative stormwater management projects. In this case, 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 costs associated with the long-term maintenance requirements of the mitigation measure.

Netcong Borough Mitigation Plan:

If the applicant for a proposed development demonstrates to the satisfaction of the reviewing Board that on-site compliance with the stormwater performance standards as outlined in this MSWMP is not practical, the Board will entertain a request for a waiver or exemption from said standards. In order to obtain the waiver or exemption from strict compliance with the groundwater recharge, stormwater quantity and/or stormwater quality requirements as outlined in this Municipal Stormwater Management Plan and ordinances, the applicant must provide mitigation in accordance with the following:

1. A 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 applicant can select a project listed in the Municipal Stormwater Management Plan to compensate for the deficit from the performance standards resulting from the proposed project. The MSWMP will be amended from time to time to include these projects as they are identified by the various entities and programs performing land use and

watershed studies including Netcong Borough. The applicant, in configuring a mitigation proposal should utilize water resources information included in the Natural Resources Inventory and Conservation Elements of the municipal master plan.

• The applicant must demonstrate the ability to obtain the necessary agreements to create a project to compensate for the deficit from the performance standards resulting from the proposed project.

• The applicant must ensure the long-term maintenance of the project including the maintenance requirements under the relevant chapters of the most current version of the NJ Stormwater BMP Manual.

2. If a suitable mitigation site cannot be located in the same drainage area as the proposed development, as discussed under Option 1, the municipality may allow the applicant to provide funding to the municipality for an environmental enhancement project that has been identified in this Municipal Stormwater Management Plan as amended. The funding must be equal to or greater than the cost to implement the mitigation outlined above, including the costs associated with purchasing the property or easement for mitigation and the costs associated with the long-term maintenance requirements of the mitigation measure.

Adequate documentation must be provided by applicants for evaluation of proposals for mitigation projects. Information must include, but not be limited to the following:

1. Detailed technical justification for the waiver request, including relevant site specific soils, hydrologic, hydrogelogic, topographic and other environmental data based on in-situ testing. The information must be presented in a technical report format suitable for review by reviewing Board members and Board professionals.

2. Description of opportunities for acquisition of or deed restriction of nearby (within same drainage area) private land, preferably adjacent to State Open Waters that would be dedicated for preservation or reforestation to offset shortfall in recharge. The report must also include documentation that the waiver, if granted, will not result in near-field soil erosion or sedimentation, or negative impacts on wetlands or other critical areas.

3. Evaluation of options for retrofit of public or private property nearby (within same drainage area) with equivalent water resource value to "avoided" project.

4. Documentation that the mitigation project is sized based at a minimum on the monetary value of avoided project assuming average constraints.

5. Determination of the water resources value of the proposed mitigation project to ongoing regional or other stormwater planning must be provided.

APPENDIX A

WHEREAS, the State of New Jersey amended its Stormwater Management Rules at N.J.A.C. 7:8 on March 2, 2020; and

WHEREAS, municipalities in the State of New Jersey are required to amend their Stormwater Control Ordinances to align with the updated Stormwater Management Rules at N.J.A.C. 7:8 on or before March 2, 2021.

NOW, THEREFORE, BE IT ORDAINED, by the Borough Council of the Borough of Netcong, in the County of Morris, and State of New Jersey, as follows:

SECTION 1. Chapter 194, Article XII, "Stormwater Management" of the Revised General Ordinances of the Borough of Netcong shall be amended to read, in its entirety, as follows:

Article XII
Stormwater Control

§194-89. Policy Statement

Flood control, groundwater recharge, and pollutant reduction shall be achieved through the use of stormwater management measures, including green infrastructure Best Management Practices (GI BMPs) and nonstructural stormwater management strategies. GI BMPs and low impact development (LID) should be utilized to meet the goal of maintaining natural hydrology to reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution. GI BMPs and LID should be developed based upon physical site conditions and the origin, nature and the anticipated quantity, or amount, of potential pollutants. Multiple stormwater management BMPs may be necessary to achieve the established performance standards for water quality, quantity, and groundwater recharge.

§194-90. Purpose

The purpose of this ordinance is to establish minimum stormwater management requirements and controls for "major development," as defined below in §194-93.

§194-91. Applicability

1. This ordinance shall be applicable to the following major developments:

a. Non-residential major developments; and
b. Aspects of residential major developments that are not pre-empted by the Residential Site Improvement Standards at N.J.A.C. 5:21.

2. This ordinance shall also be applicable to all major developments undertaken by the Borough of Netcong and other governmental entities.

§194-92. Compatibility with Other Permit and Ordinance Requirements

Development approvals issued pursuant to this ordinance are to be considered an integral part of development approvals and do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance. In their interpretation and application, the provisions of this ordinance shall be held to be the minimum requirements for the promotion of the public health, safety, and general welfare.

This ordinance is not intended to interfere with, abrogate, or annul any other ordinances, rule or regulation, statute, or other provision of law except that, where any provision of this ordinance imposes restrictions different from those imposed by any other ordinance, rule or regulation, or other provision of law, the more restrictive provisions or higher standards shall control.

§194-93. Definitions.

For the purpose of this ordinance, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this Chapter clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word "shall" is always mandatory and not merely directory. The definitions below are the same as or based on the corresponding definitions in the Stormwater Management Rules at N.J.A.C. 7:8-1.2.

"Community basin" means an infiltration system, sand filter designed to infiltrate, standard constructed wetland, or wet pond, established in accordance with N.J.A.C. 7:8-4.2(c)14, that is designed and constructed in accordance with the New Jersey Stormwater Best Management Practices Manual, or an alternate design, approved in accordance with N.J.A.C. 7:8-5.2(g), for an infiltration system, sand filter designed to infiltrate, standard constructed wetland, or wet pond and that complies with the requirements of this chapter.

"Compaction" means the increase in soil bulk density.

"Contributory drainage area" means the area from which stormwater runoff drains to a stormwater management measure, not including the area of the stormwater management measure itself.

"Core" means a pedestrian-oriented area of commercial and civic uses serving the surrounding municipality, generally including housing and access to public transportation.

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

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

"Department" means the Department of Environmental Protection.

"Designated Center" means a State Development and Redevelopment Plan Center as designated by the State Planning Commission such as urban, regional, town, village, or hamlet.

"Design engineer" means a person professionally qualified and duly licensed in New Jersey to perform engineering services that may include, but not necessarily be limited to, development of project requirements, creation and development of project design and preparation of drawings and specifications.

"Development" means the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlarge-enlargement of any building or structure, any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land, for which permission is required under the Municipal Land Use Law, N.J.S.A. 40:55D-1 *et seq*.
In the case of development of agricultural land, development means: any activity that requires a State permit, any activity reviewed by the County Agricultural Board (CAB) and the State Agricultural Development Committee (SADC), and municipal review of any activity not exempted by the Right to Farm Act , N.J.S.A 4:1C-1 et seq.

"Disturbance" means the placement or reconstruction of impervious surface or motor vehicle surface, or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation. Milling and repaving is not considered disturbance for the purposes of this definition.

"Drainage area" means a geographic area within which stormwater, sediments, or dissolved materials drain to a particular receiving waterbody or to a particular point along a receiving waterbody.

"Environmentally constrained area" means the following areas where the physical alteration of the land is in some way restricted, either through regulation, easement, deed restriction or ownership such as: wetlands, floodplains, threatened and endangered species sites or designated habitats, and parks and preserves. Habitats of endangered or threatened species are identified using the Department's Landscape Project as approved by the Department's Endangered and Nongame Species Program.

"Environmentally critical area" means an area or feature which is of significant environmental value, including but not limited to: stream corridors, natural heritage priority sites, habitats of endangered or threatened species, large areas of contiguous open space or upland forest, steep slopes, and well head protection and groundwater recharge areas. Habitats of endangered or threatened species are identified using the Department's Landscape Project as approved by the Department's Endangered and Nongame Species Program.

"Empowerment Neighborhoods" means neighborhoods designated by the Urban Coordinating Council "in consultation and conjunction with" the New Jersey Redevelopment Authority pursuant to N.J.S.A 55:19-69.

"Erosion" means the detachment and movement of soil or rock fragments by water, wind, ice, or gravity.

"Green infrastructure" means a stormwater management measure that manages stormwater close to its source by:

1. Treating stormwater runoff through infiltration into subsoil;
2. Treating stormwater runoff through filtration by vegetation or soil; or
3. Storing stormwater runoff for reuse.

"HUC 14" or "hydrologic unit code 14" means an area within which water drains to a particular receiving surface water body, also known as a subwatershed, which is identified by a 14-digit hydrologic unit boundary designation, delineated within New Jersey by the United States Geological Survey.

"Impervious surface" means a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water.

"Infiltration" is the process by which water seeps into the soil from precipitation.

"Lead planning agency" means one or more public entities having stormwater management planning authority designated by the regional stormwater management

planning committee pursuant to N.J.A.C. 7:8-3.2, that serves as the primary representative of the committee.

"Major development" means an individual "development," as well as multiple developments that individually or collectively result in:

1. The disturbance of one or more acres of land since February 2, 2004;
2. The creation of one-quarter acre or more of "regulated impervious surface" since February 2, 2004;
3. The creation of one-quarter acre or more of "regulated motor vehicle surface" since January 1, 2021; or
4. A combination of 2 and 3 above that totals an area of one-quarter acre or more. The same surface shall not be counted twice when determining if the combination area equals one-quarter acre or more.

   Major development includes all developments that are part of a common plan of development or sale (for example, phased residential development) that collectively or individually meet any one or more of paragraphs 1, 2, 3, or 4 above. Projects undertaken by any government agency that otherwise meet the definition of "major development" but which do not require approval under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq., are also considered "major development."

"Motor vehicle" means land vehicles propelled other than by muscular power, such as automobiles, motorcycles, autocycles, and low speed vehicles. For the purposes of this definition, motor vehicle does not include farm equipment, snowmobiles, all-terrain vehicles, motorized wheelchairs, go-carts, gas buggies, golf carts, ski-slope grooming machines, or vehicles that run only on rails or tracks.

"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.

"Municipality" means any city, borough, town, Borough, or village.

"New Jersey Stormwater Best Management Practices (BMP) Manual" or "BMP Manual" means the manual maintained by the Department providing, in part, design specifications, removal rates, calculation methods, and soil testing procedures approved by the Department as being capable of contributing to the achievement of the stormwater management standards specified in this chapter. The BMP Manual is periodically amended by the Department as necessary to provide design specifications on additional best management practices and new information on already included practices reflecting the best available current information regarding the particular practice and the Department's determination as to the ability of that best management practice to contribute to compliance with the

standards contained in this chapter. Alternative stormwater management measures, removal rates, or calculation methods may be utilized, subject to any limitations specified in this chapter, provided the design engineer demonstrates to the municipality, in accordance with IV.F. of this ordinance and N.J.A.C. 7:8-5.2(g), that the proposed measure and its design will contribute to achievement of the design and performance standards established by this chapter.

"Node" means an area designated by the State Planning Commission concentrating facilities and activities which are not organized in a compact form.

"Nutrient" means a chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the development of organisms.

"Person" means any individual, corporation, company, partnership, firm, association, political subdivision of this State and any state, interstate or Federal agency.

"Pollutant" means any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, medical wastes, radioactive substance (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§ 2011 *et seq.*)), thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt, industrial, municipal, agricultural, and construction waste or runoff, or other residue discharged directly or indirectly to the land, ground waters or surface waters of the State, or to a domestic treatment works. "Pollutant" includes both hazardous and nonhazardous pollutants.

"Recharge" means the amount of water from precipitation that infiltrates into the ground and is not evapotranspired.

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

1. A net increase of impervious surface;
2. The total area of impervious surface collected by a new stormwater conveyance system (for the purpose of this definition, a "new stormwater conveyance system" is a stormwater conveyance system that is constructed where one did not exist immediately prior to its construction or an existing system for which a new discharge location is created);
3. The total area of impervious surface proposed to be newly collected by an existing stormwater conveyance system; and/or
4. The total area of impervious surface collected by an existing stormwater conveyance system where the capacity of that conveyance system is increased.

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

1. The total area of motor vehicle surface that is currently receiving water;
2. A net increase in motor vehicle surface; and/or
   quality treatment either by vegetation or soil, by an existing stormwater management measure, or by treatment at a wastewater treatment plant, where the water quality treatment will be modified or removed.

"Sediment" means solid material, mineral or organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water or gravity as a product of erosion.

"Site" means the lot or lots upon which a major development is to occur or has occurred.

"Soil" means all unconsolidated mineral and organic material of any origin.

"State Development and Redevelopment Plan Metropolitan Planning Area (PA1)" means an area delineated on the State Plan Policy Map and adopted by the State Planning Commission that is intended to be the focus for much of the State's future redevelopment and revitalization efforts.

"State Plan Policy Map" is defined as the geographic application of the State Development and Redevelopment Plan's goals and statewide policies, and the official map of these goals and policies.

"Stormwater" means water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.

"Stormwater management BMP" means an excavation or embankment and related areas designed to retain stormwater runoff. A stormwater management BMP may either be normally dry (that is, a detention basin or infiltration system), retain water in a permanent pool (a retention basin), or be planted mainly with wetland vegetation (most constructed stormwater wetlands).

"Stormwater management measure" means any practice, technology, process, program, or other method intended to control or reduce stormwater runoff and associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal non-stormwater discharges into stormwater conveyances.

"Stormwater runoff" means water flow on the surface of the ground or in storm sewers, resulting from precipitation.

"Stormwater management planning agency" means a public body authorized by legislation to prepare stormwater management plans.

"Stormwater management planning area" means the geographic area for which a stormwater management planning agency is authorized to prepare stormwater management plans, or a specific portion of that area identified in a stormwater management plan prepared by that agency.

"Urban Coordinating Council Empowerment Neighborhood" means a neighborhood given priority access to State resources through the New Jersey Redevelopment Authority.

"Urban Enterprise Zones" means a zone designated by the New Jersey Enterprise Zone Authority pursuant to the New Jersey Urban Enterprise Zones Act, N.J.S.A. 52:27H-60 et. seq.

"Urban Redevelopment Area" is defined as previously developed portions of areas:

1. Delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA1), Designated Centers, Cores or Nodes;
2. Designated as CAFRA Centers, Cores or Nodes;
3. Designated as Urban Enterprise Zones; and
4. Designated as Urban Coordinating Council Empowerment Neighborhoods.

"Water control structure" means a structure within, or adjacent to, a water, which intentionally or coincidentally alters the hydraulic capacity, the flood elevation resulting from the two-, 10-, or 100-year storm, flood hazard area limit, and/or floodway limit of the water. Examples of a water control structure may include a bridge, culvert, dam, embankment, ford (if above grade), retaining wall, and weir.

"Waters of the State" means the ocean and its estuaries, all springs, streams, wetlands, and bodies of surface or groundwater, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction.

"Wetlands" or "wetland" means an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

§194-94. Design and Performance Standards for Stormwater Management Measures.

A. Stormwater management measures for major development shall be designed to provide erosion control, groundwater recharge, stormwater runoff quantity control, and stormwater runoff quality treatment as follows:

1. The minimum standards for erosion control are those established under the Soil and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules at N.J.A.C. 2:90.
2. The minimum standards for groundwater recharge, stormwater quality, and stormwater runoff quantity shall be met by incorporating green infrastructure.

B. The standards in this ordinance 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.
Note: Alternative standards shall provide at least as much protection from stormwater related loss of groundwater recharge stormwater quality and water quality impacts of major development projects as would be provided under the standards in N.J.A.C. 7:8

§194-95. 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 §194 -101.

B. Stormwater management measures shall avoid adverse impacts of concentrated flow on habitat for threatened and endangered species as documented in the Department's 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 muhlnebergi* (bog turtle).

C. The following linear development projects are exempt from the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity requirements of §194-5P, Q and R:

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 green infrastructure, groundwater recharge, stormwater runoff quality, and stormwater runoff quantity requirements of §194-5O, P, Q and R 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 alternative's analysis, that through the use of stormwater management measures, the option selected complies with the requirements of §195-4O, P, Q and R to the maximum extent practicable;
3. The applicant demonstrates that, in order to meet the requirements of §194-5O, P, Q and R, 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 §194 -4D(3) above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate the requirements of §194-5O, P, Q and R that were not achievable onsite.

E. Tables 1 through 3 below summarize the ability of stormwater best management practices identified and described in the New Jersey Stormwater Best Management Practices Manual to satisfy the green infrastructure, groundwater recharge, stormwater runoff quality and stormwater runoff quantity standards specified in §194-5O, P, Q and R. When designed in accordance with the most current version of the New Jersey Stormwater Best Management Practices Manual, the stormwater management measures found at N.J.A.C. 7:8-5.2 (f) Tables 5-1, 5-2 and 5-3 and listed below in Tables 1, 2 and 3 are presumed to be capable of providing stormwater controls for the design and performance standards as outlined in the tables below. Upon amendments of the New Jersey Stormwater Best Management Practices to reflect additions or deletions of BMPs meeting these standards, or changes in the presumed performance of BMPs designed in accordance with the New Jersey Stormwater BMP Manual, the Department shall publish in the New Jersey Registers a notice of administrative change revising the applicable table. The most current version of the BMP Manual can be found on the Department's website at: https://njstormwater.org/bmp_manual2.htm.

F. Where the BMP tables in the NJ Stormwater Management Rule are different due to updates or amendments with the tables in this ordinance the BMP Tables in the Stormwater Management rule at N.J.A.C. 7:8-5.2(f) shall take precedence.

Table 1
Green Infrastructure BMPs for Groundwater Recharge, Stormwater Runoff Quality, and/or Stormwater Runoff Quantity

Best Management Practice	Stormwater Runoff Quality TSS Removal Rate (percent)	Stormwater Runoff Quantity	Groundwater Recharge	Minimum Separation from Seasonal High Water Table (feet)
Cistern	0	Yes	No	
Dry Well[a]	0	No	Yes	2
Grass Swale	50 or less	No	No	2[e] 1[f]
Green Roof	0	Yes	No	--
Manufactured Treatment Device[a] [g]	50 or 80	No	No	Dependent upon the device
Pervious Paving System[a]	80	Yes	Yes[b] No[c]	2[b] 1[c]
Small-Scale Bioretention Basin[a]	80 or 90	Yes	Yes[b] No[c]	2[b] 1[c]
Small-Scale Infiltration Basin[a]	80	Yes	Yes	2
Small-Scale Sand Filter	80	Yes	Yes	2
Vegetative Filter Strip	60-80	No	No	--

(Notes corresponding to annotations [a] through [g] are found below)

Table 2
Green Infrastructure BMPs for Stormwater Runoff Quantity
(or for Groundwater Recharge and/or Stormwater Runoff Quality with a Waiver or Variance from N.J.A.C. 7:8-5.3)

Best Management Practice	Stormwater Runoff Quality TSS Removal Rate (percent)	Stormwater Runoff Quantity	Groundwater Recharge	Minimum Separation from Seasonal High Water Table (feet)
Bioretention System	80 or 90	Yes	Yes[b] No[c]	2[b] 1[c]
Infiltration Basin	80	Yes	Yes	2
Sand Filter[b]	80	Yes	Yes	2
Standard Constructed Wetland	90	Yes	No	N/A
Wet Pond[d]	50-90	Yes	No	N/A

(Notes corresponding to annotations [b] through [d] are found below)

Table 3
BMPs for Groundwater Recharge, Stormwater Runoff Quality, and/or Stormwater Runoff Quantity only with a Waiver or Variance from N.J.A.C. 7:8-5.3

Best Management Practice	Stormwater Runoff Quality TSS Removal Rate (percent)	Stormwater Runoff Quantity	Groundwater Recharge	Minimum Separation from Seasonal High Water Table (feet)
Blue Roof	0	Yes	No	N/A
Extended Detention Basin	40-60	Yes	No	1
Manufactured Treatment Device[h]	50 or 80	No	No	Dependent upon the device
Sand Filter[c]	80	Yes	No	
Subsurface Gravel Wetland	90	No	No	1
Wet Pond	50-90	Yes	No	N/A

Notes to Tables 1, 2, and 3:

a. subject to the applicable contributory drainage area limitation specified at §194-5O(2);
b. designed to infiltrate into the subsoil;
c. designed with underdrains;
d. designed to maintain at least a 10-foot wide area of native vegetation along at least 50 percent of the shoreline and to include a stormwater runoff retention component designed to capture stormwater runoff for beneficial reuse, such as irrigation;
e. designed with a slope of less than two percent;
f. designed with a slope of equal to or greater than two percent;
g. manufactured treatment devices that meet the definition of green infrastructure at §194-93;
h. manufactured treatment devices that do not meet the definition of green infrastructure at §194-93.

G. An alternative stormwater management measure, alternative removal rate, and/or alternative method to calculate the removal rate may be used if the design engineer demonstrates the capability of the proposed alternative stormwater management measure and/or the validity of the alternative rate or method to the municipality. A copy of any approved alternative stormwater management measure, alternative removal rate, and/or alternative method to calculate the removal rate shall be provided to the Department in accordance with §194-97B. Alternative stormwater management measures may be used to satisfy the requirements at §194-95O only if the measures meet the definition of green infrastructure at §194-93. Alternative stormwater management measures that function in a similar manner to a BMP listed at §194-95 O(2) are subject to the contributory drainage area limitation specified at §194-95 O(2) for that similarly functioning BMP. Alternative stormwater management measures approved in accordance with this subsection that do not function in a similar manner to any BMP listed at §194-95O(2) shall have a contributory drainage area less than or equal to 2.5 acres, except for alternative stormwater management measures that function similarly to cisterns, grass swales, green roofs, standard constructed wetlands, vegetative filter strips, and wet ponds, which are not subject to a contributory drainage area limitation. Alternative measures that function similarly to standard constructed wetlands or wet ponds shall not be used for compliance with the stormwater runoff quality standard unless a variance in accordance with N.J.A.C. 7:8-4.6 or a waiver from strict compliance in accordance with §194-95 D is granted from §194-95 O.

H. Whenever the stormwater management design includes one or more BMPs that will infiltrate stormwater into subsoil, 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 or other subsurface structures within the zone of influence of the groundwater mound, or interference with the proper functioning of the stormwater management measure itself.

I. Design standards for stormwater management measures are as follows:

1. Stormwater management measures shall be designed to take into account the existing site conditions, including, but not limited to, environmentally critical areas; wetlands; flood-prone areas; slopes; depth to seasonal high-water table; soil type, permeability, and texture; drainage area and drainage patterns; and the presence of solution-prone carbonate rocks (limestone);
2. Stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs, and ensure proper functioning. Trash racks shall be installed at the intake to the outlet structure, as appropriate, and shall have parallel bars with one-inch spacing between the bars to the elevation of the water quality design storm. For

elevations higher than the water quality design storm, the parallel bars at the outlet structure shall be spaced no greater than one-third the width of the diameter of the orifice or one-third the width of the weir, with a minimum spacing between bars of one inch and a maximum spacing between bars of six inches. In addition, the design of trash racks must comply with the requirements of §194-99C;

3. Stormwater management measures shall be designed, constructed, and installed to be strong, durable, and corrosion resistant. Measures that are consistent with the relevant portions of the Residential Site Improvement Standards at N.J.A.C. 5:21-7.3, 7.4, and 7.5 shall be deemed to meet this requirement;
4. Stormwater management BMPs shall be designed to meet the minimum safety standards for stormwater management BMPs at §194-99; and
5. The size of the orifice at the intake to the outlet from the stormwater management BMP shall be a minimum of two and one-half inches in diameter.

J. Manufactured treatment devices may be used to meet the requirements of this subchapter, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced Technology and certified by the Department. Manufactured treatment devices that do not meet the definition of green infrastructure at §194-93 may be used only under the circumstances described at §194-95 O (4).

K. Any application for a new agricultural development that meets the definition of major development at §194-93 shall be submitted to the Soil Conservation District for review and approval in accordance with the requirements at §194-95 O, P, Q and R and any applicable Soil Conservation District guidelines for stormwater runoff quantity and erosion control. For purposes of this subsection, "agricultural development" means land uses normally associated with the production of food, fiber, and livestock for sale. Such uses do not include the development of land for the processing or sale of food and the manufacture of agriculturally related products.

L. If there is more than one drainage area, the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards at §194-95 P, Q and R shall be met in each drainage area, unless the runoff from the drainage areas converge onsite and no adverse environmental impact would occur as a result of compliance with any one or more of the individual standards being determined utilizing a weighted average of the results achieved for that individual standard across the affected drainage areas.

M. Any stormwater management measure authorized under the municipal stormwater management plan or ordinance shall be reflected in a deed notice recorded in the Office of the Morris County Clerk or the registrar of deeds and mortgages of the county in which the development, project, project site, or

mitigation area containing the stormwater management measure is located, as appropriate, to the municipality. A form of deed notice shall be submitted to the Borough for approval prior to filing. The deed notice shall contain a description of the stormwater management measure(s) used to meet the green infrastructure, groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards at §194-95O, P, Q and R and shall identify the location of the stormwater management measure(s) in NAD 1983 State Plane New Jersey FIPS 2900 US Feet or Latitude and Longitude in decimal degrees. The deed notice shall also reference the maintenance plan required to be recorded upon the deed pursuant to §194 -101B (5). Prior to the commencement of construction, proof that the above required deed notice has been filed shall be submitted to the municipality. Proof that the required information has been recorded on the deed shall be in the form of either a copy of the complete recorded document or a receipt from the clerk or other proof of recordation provided by the recording office. However, if the initial proof provided to the municipality is not a copy of the complete recorded document, a copy of the complete recorded document shall be provided to the municipality within 180 calendar days of the authorization granted by the municipality.

N. A stormwater management measure approved under the municipal stormwater management plan or ordinance may be altered or replaced with the approval of the municipality if the municipality determines that the proposed alteration or replacement meets the design and performance standards pursuant to §194-95 of this ordinance and provides the same level of stormwater management as the previously approved stormwater management measure that is being altered or replaced. If an alteration or replacement is approved, a revised deed notice shall be submitted to the municipality for approval and subsequently recorded with the *Office* of the Morris County Clerk or the registrar of deeds and mortgages, as applies and shall contain a description and location of the stormwater management measure, as well as reference to the maintenance plan, in accordance with §194-95M above. Prior to the commencement of construction, proof that the above required deed notice has been filed shall be submitted to the municipality in accordance with §194-95M above.

O. Green Infrastructure Standards

1. This subsection specifies the types of green infrastructure BMPs that may be used to satisfy the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards.

2. To satisfy the groundwater recharge and stormwater runoff quality standards at §194-95P and Q, the design engineer shall utilize green infrastructure BMPs identified in Table 1 at §194-95F and/or an alternative stormwater management measure approved in accordance with §194-95G. The following green infrastructure BMPs are subject to the following maximum contributory drainage area limitations:

Best Management Practice	Maximum Contributory Drainage Area
Dry Well	1 acre
Manufactured Treatment Device	2.5 acres
Pervious Pavement Systems	Area of additional inflow cannot exceed three times the area occupied by the BMP
Small-scale Bioretention Systems	2.5 acres
Small-scale Infiltration Basin	2.5 acres
Small-scale Sand Filter	2.5 acres

3. To satisfy the stormwater runoff quantity standards at §194-95R, the design engineer shall utilize BMPs from Table 1 or from Table 2 and/or an alternative stormwater management measure approved in accordance with §194-95G.
4. If a variance in accordance with N.J.A.C. 7:8-4.6 or a waiver from strict compliance in accordance with §194-95D is granted from the requirements of this subsection, then BMPs from Table 1, 2, or 3, and/or an alternative stormwater management measure approved in accordance with §194-95G may be used to meet the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards at §194-95P, Q and R.
5. For separate or combined storm sewer improvement projects, such as sewer separation, undertaken by a government agency or public utility (for example, a sewerage company), the requirements of this subsection shall only apply to areas owned in fee simple by the government agency or utility, and areas within a right-of-way or easement held or controlled by the government agency or utility; the entity shall not be required to obtain additional property or property rights to fully satisfy the requirements of this subsection. Regardless of the amount of area of a separate or combined storm sewer improvement project subject to the green infrastructure requirements of this subsection, each project shall fully comply with the applicable groundwater recharge, stormwater runoff quality control, and stormwater runoff quantity standards at §194-95P, Q and R, unless the

project is granted a waiver from strict compliance in accordance with §194-95D.

P. Groundwater Recharge Standards

1. This subsection contains the minimum design and performance standards for groundwater recharge as follows:
2. The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at §194-96, either:
   i. Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual pre-construction groundwater recharge volume for the site; or
   ii. Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the 2-year storm is infiltrated.
3. This groundwater recharge requirement does not apply to projects within the "urban redevelopment area," or to projects subject to §194-95P(4) below.

4. The following types of stormwater shall not be recharged:

   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 plan or landfill closure plan 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, 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.

Q. Stormwater Runoff Quality Standards

1. This subsection contains the minimum design and performance standards to control stormwater runoff quality impacts of major development.

Stormwater runoff quality standards are applicable when the major development results in an increase of one-quarter acre or more of regulated motor vehicle surface.

2. 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 as follows:

   i. Eighty (80%) percent TSS removal of the anticipated load, expressed as an annual average shall be achieved for the stormwater runoff from the net increase of motor vehicle surface.
   ii. 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.

3. 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. Every major development, including any that discharge into a combined sewer system, shall comply with 2 above, unless the major development is itself subject to a NJPDES permit with a numeric effluent limitation for TSS or the NJPDES permit to which the major development is subject exempts the development from a numeric effluent limitation for TSS.

4. 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 4, below. The calculation of the volume of runoff may take into account the implementation of stormwater management measures.

Table 4 - Water Quality Design Storm

Distribution					
Time (Minutes)	Cumulative Rainfall (Inches)	Time (Minutes)	Cumulative Rainfall (Inches)	Time (Minutes)	Cumulative Rainfall (Inches)
1	0.00166	41	0.1728	81	1.0906
2	0.00332	42	0.1796	82	1.0972
3	0.00498	43	0.1864	83	1.1038
4	0.00664	44	0.1932	84	1.1104
5	0.00830	45	0.2000	85	1.1170
6	0.00996	46	0.2117	86	1.1236
7	0.01162	47	0.2233	87	1.1302
8	0.01328	48	0.2350	88	1.1368
9	0.01494	49	0.2466	89	1.1434
10	0.01660	50	0.2583	90	1.1500
11	0.01828	51	0.2783	91	1.1550
12	0.01996	52	0.2983	92	1.1600
13	0.02164	53	0.3183	93	1.1650
14	0.02332	54	0.3383	94	1.1700
15	0.02500	55	0.3583	95	1.1750
16	0.03000	56	0.4116	96	1.1800
17	0.03500	57	0.4650	97	1.1850
18	0.04000	58	0.5183	98	1.1900
19	0.04500	59	0.5717	99	1.1950
20	0.05000	60	0.6250	100	1.2000
21	0.05500	61	0.6783	101	1.2050
22	0.06000	62	0.7317	102	1.2100
23	0.06500	63	0.7850	103	1.2150
24	0.07000	64	0.8384	104	1.2200
25	0.07500	65	0.8917	105	1.2250
26	0.08000	66	0.9117	106	1.2267
27	0.08500	67	0.9317	107	1.2284
28	0.09000	68	0.9517	108	1.2300
29	0.09500	69	0.9717	109	1.2317
30	0.10000	70	0.9917	110	1.2334
31	0.10660	71	1.0034	111	1.2351
32	0.11320	72	1.0150	112	1.2367
33	0.11980	73	1.0267	113	1.2384
34	0.12640	74	1.0383	114	1.2400
35	0.13300	75	1.0500	115	1.2417
36	0.13960	76	1.0568	116	1.2434
37	0.14620	77	1.0636	117	1.2450
38	0.15280	78	1.0704	118	1.2467
39	0.15940	79	1.0772	119	1.2483
40	0.16600	80	1.0840	120	1.2500

5. 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:

   $R = A + B - (A \times B) / 100$,
   Were

   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.

6. Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the post-construction nutrient load of the anticipated load from the developed site in stormwater runoff generated from the water quality design storm. In achieving reduction of nutrients to the maximum extent feasible, the design of the site shall include green infrastructure BMPs that optimize nutrient removal while still achieving the performance standards in §194-95P, Q and R.

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. The Flood Hazard Area Control Act Rules at N.J.A.C. 7:13-4.1(c)1 establish 300-foot riparian zones along Category One waters, as designated in the Surface Water Quality Standards at N.J.A.C. 7:9B, and certain upstream tributaries to Category One waters. A person shall not undertake a major development that is located within or discharges into a 300-foot riparian zone without prior authorization from the Department under N.J.A.C. 7:13.

9. Pursuant to the Flood Hazard Area Control Act Rules at N.J.A.C. 7:13-11.2(j)3.i, runoff from the water quality design storm that is discharged within a 300-foot riparian zone shall be treated in accordance with this subsection to reduce the post-construction load of total suspended solids by 95 percent of the anticipated load from the developed site, expressed as an annual average.

10. This stormwater runoff quality standards do not apply to the construction of one individual single-family dwelling, provided that it is not part of a larger development or subdivision that has received preliminary or final site plan approval prior to December 3, 2018, and that the motor vehicle surfaces are made of permeable material(s) such as gravel, dirt, and/or shells.

R. Stormwater Runoff Quantity Standards

1. This subsection contains the minimum design and performance standards to control stormwater runoff quantity impacts of major development.
2. In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff calculations at §194-96, complete one of the following:

   i. Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 2-, 10-, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events;
   ii. 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 2-, 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;
   iii. Design stormwater management measures so that the post-construction peak runoff rates for the 2-, 10- and 100-year storm events are 50, 75 and 80 percent, respectively, of the pre-construction peak runoff rates. 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; or
   iv. In tidal flood hazard areas, stormwater runoff quantity analysis in accordance with 2.i, ii and iii above is required unless the design engineer demonstrates through hydrologic and hydraulic analysis that the increased volume, change in timing, or increased rate of the stormwater runoff, or any combination of the three will not result in additional flood damage below the point of discharge of the major development. No analysis is required if the stormwater is discharged directly into any ocean, bay, inlet, or the reach of any watercourse between its confluence with an ocean, bay, or inlet and downstream of the first water control structure.

3. The stormwater runoff quantity standards shall be applied at the site's boundary to each abutting lot, roadway, watercourse, or receiving storm sewer system.

§194-96. Calculation of Stormwater Runoff and Groundwater Recharge.

A. Stormwater runoff shall be calculated in accordance with the following:

   1. The design engineer shall calculate runoff using one of the following methods:

i. The USDA Natural Resources Conservation Service (NRCS) methodology, including the NRCS Runoff Equation and Dimensionless Unit Hydrograph, as described in Chapters 7, 9, 10, 15 and 16 Part 630, Hydrology National Engineering Handbook, incorporated herein by reference as amended and supplemented. This methodology is additionally described in *Technical Release 55 - Urban Hydrology for Small Watersheds* (TR-55), dated June 1986, incorporated herein by reference as amended and supplemented. Information regarding the methodology is available from the Natural Resources Conservation Service website at:

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044171.pdf

or at United States Department of Agriculture Natural Resources Conservation Service, 220 Davison Avenue, Somerset, New Jersey 08873; or

ii. The Rational Method for peak flow and the Modified Rational Method for hydrograph computations. The rational and modified rational methods are described in "Appendix A-9 Modified Rational Method" in the Standards for Soil Erosion and Sediment Control in New Jersey, January 2014. This document is available from the State Soil Conservation Committee or any of the Soil Conservation Districts listed at N.J.A.C. 2:90-1.3(a)3. The location, address, and telephone number for each Soil Conservation District is available from the State Soil Conservation Committee, PO Box 330, Trenton, New Jersey 08625. The document is also available at:

http://www.nj.gov/agriculture/divisions/anr/pdf/2014NJSoilErosionControlStandardsComplete.pdf.

2. For the purpose of calculating runoff coefficients and groundwater recharge, there is a presumption that the pre-construction condition of a site or portion thereof is a wooded land use with good hydrologic condition. The term "runoff coefficient" applies to both the NRCS methodology above at §194-96A(1)[i] and the Rational and Modified Rational Methods at §194-96A(1)[ii]. A runoff coefficient or a groundwater recharge land cover for an existing condition may be used on all or a portion of the site if the design engineer verifies that the hydrologic condition has existed on the site or portion of the site for at least five years without interruption prior to the time of application. If more than one land cover have existed on the site during the five years immediately prior to the time of application, the land cover with the lowest runoff potential shall be used for the computations. In addition, there is the presumption that the site is in good hydrologic condition (if the land use type is pasture, lawn, or park), with

good cover (if the land use type is woods), or with good hydrologic condition and conservation treatment (if the land use type is cultivation).

3. In computing pre-construction stormwater runoff, the design engineer shall account for all significant land features and structures, such as ponds, wetlands, depressions, hedgerows, or culverts, that may reduce pre-construction stormwater runoff rates and volumes.

4. In computing stormwater runoff from all design storms, the design engineer shall consider the relative stormwater runoff rates and/or volumes of pervious and impervious surfaces separately to accurately compute the rates and volume of stormwater runoff from the site. To calculate runoff from unconnected impervious cover, urban impervious area modifications as described in the NRCS *Technical Release 55 – Urban Hydrology for Small Watersheds* or other methods may be employed.

5. If the invert of the outlet structure of a stormwater management measure is below the flood hazard design flood elevation as defined at N.J.A.C. 7:13, the design engineer shall take into account the effects of tailwater in the design of structural stormwater management measures.

B. Groundwater recharge may be calculated in accordance with the following:

The New Jersey Geological Survey Report GSR-32, A Method for Evaluating Groundwater-Recharge Areas in New Jersey, incorporated herein by reference as amended and supplemented. Information regarding the methodology is available from the New Jersey Stormwater Best Management Practices Manual; at the New Jersey Geological Survey website at:

https://www.nj.gov/dep/njgs/pricelst/gsreport/gsr32.pdf

or at New Jersey Geological and Water Survey, 29 Arctic Parkway, PO Box 420 Mail Code 29-01, Trenton, New Jersey 08625-0420.

§194-97. Sources for Technical Guidance.

A. Technical guidance for stormwater management measures can be found in the documents listed below, which are available to download from the Department's website at:

http://www.nj.gov/dep/stormwater/bmp_manual2.htm.

1. Guidelines for stormwater management measures are contained in the New Jersey Stormwater Best Management Practices Manual, as amended and supplemented. Information is provided on stormwater management measures such as, but not limited to, those listed in Tables 1, 2, and 3.

2. Additional maintenance guidance is available on the Department's website at:

   https://www.njstormwater.org/maintenance_guidance.htm.

B. Submissions required for review by the Department should be mailed to:

   The Division of Water Quality, New Jersey Department of Environmental Protection, Mail Code 401-02B, PO Box 420, Trenton, New Jersey 08625-0420.

§194-98. Solids and Floatable Materials Control Standards.

A. Site design features identified under §194-4F above, or alternative designs in accordance with §194-4G above, to prevent discharge of trash and debris from drainage systems shall comply with the following standard to control passage of solid and floatable materials through storm drain inlets. For purposes of this paragraph, "solid and floatable materials" means sediment, debris, trash, and other floating, suspended, or settleable solids. For exemptions to this standard see §194-98(2) below.

   1. Design engineers shall use one 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:

      i. 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; or
      ii. A different grate, if each individual clear space in that grate has an area of no more than seven (7.0) square inches, or is no greater than 0.5 inches across the smallest dimension.

         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 system floors used to collect stormwater from the surface into a storm drain or surface water body.

      iii. For curb-opening inlets, including curb-opening inlets in combination inlets, 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 (7.0) square inches, or be no greater than two (2.0) inches across the smallest dimension.

2. The standard in A.1. above does not apply:

   i. Where each individual clear space in the curb opening in existing curb-opening inlet does not have an area of more than nine (9.0) square inches;
   ii. Where the municipality agrees that the standards would cause inadequate hydraulic performance that could not practicably be overcome by using additional or larger storm drain inlets;
   iii. Where flows from the water quality design storm as specified in N.J.A.C. 7:8 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 four and five-eighths (4.625) inches long and one and one-half (1.5) inches wide (this option does not apply for outfall netting facilities); or
      b. A bar screen having a bar spacing of 0.5 inches.

      These exemptions do not authorize any infringement of requirements in the Residential Site Improvement Standards for bicycle safe grates in new residential development (N.J.A.C. 5:21-4.18(b)2 and 7.4(b)1).

   iv. Where flows are conveyed through a trash rack that has parallel bars with one-inch (1 inch) spacing between the bars, to the elevation of the Water Quality Design Storm as specified in N.J.A.C. 7:8; or

   v. 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.

§194-99. Safety Standards for Stormwater Management Basins.

A. This section sets forth requirements to protect public safety through the proper design and operation of stormwater management BMPs. This section applies to any new stormwater management BMP.

B. The provisions of this section are not intended to preempt more stringent municipal or county safety requirements for new or existing stormwater management BMPs. Municipal and county stormwater management plans and ordinances may, pursuant to their authority, require existing stormwater

management BMPs to be retrofitted to meet one or more of the safety standards in §194-99C(1), §194-99C(2) and §194-99C(3) for trash racks, overflow grates, and escape provisions at outlet structures.

C. Requirements for Trash Racks, Overflow Grates and Escape Provisions

1. A trash rack is a device designed to catch trash and debris and prevent the clogging of outlet structures. Trash racks shall be installed at the intake to the outlet from the Stormwater management BMP to ensure proper functioning of the BMP outlets in accordance with the following:

   i. The trash rack shall have parallel bars, with no greater than six-inch spacing between the bars;
   ii. The trash rack shall be designed so as not to adversely affect the hydraulic performance of the outlet pipe or structure;
   iii. The average velocity of flow through a clean trash rack is not to exceed 2.5 feet per second under the full range of stage and discharge. Velocity is to be computed on the basis of the net area of opening through the rack; and
   iv. The trash rack shall be constructed of rigid, durable, and corrosion resistant material and designed to withstand a perpendicular live loading of 300 pounds per square foot.

2. An overflow grate is designed to prevent obstruction of the overflow structure. If an outlet structure has an overflow grate, such grate shall meet the following requirements:

   i. The overflow grate shall be secured to the outlet structure but removable for emergencies and maintenance.
   ii. The overflow grate spacing shall be no less than two inches across the smallest dimension
   iii. The overflow grate shall be constructed and installed to be rigid, durable, and corrosion resistant, and shall be designed to withstand a perpendicular live loading of 300 pounds per square foot.

3. Stormwater management BMPs shall include escape provisions as follows:

   i. If a stormwater management BMP has an outlet structure, escape provisions shall be incorporated in or on the structure. Escape provisions include the installation of permanent ladders, steps, rungs, or other features that provide easily accessible means of egress from stormwater management BMPs. With the prior approval of the municipality pursuant to §194-99C, a free-standing outlet structure may be exempted from this requirement;
   ii. Safety ledges shall be constructed on the slopes of all new stormwater management BMPs having a permanent pool of water deeper than two

and one-half feet. Safety ledges shall be comprised of two steps. Each step shall be four to six feet in width. One step shall be located approximately two and one-half feet below the permanent water surface, and the second step shall be located one to one and one-half feet above the permanent water surface. See §194-99E for an illustration of safety ledges in a stormwater management BMP; and

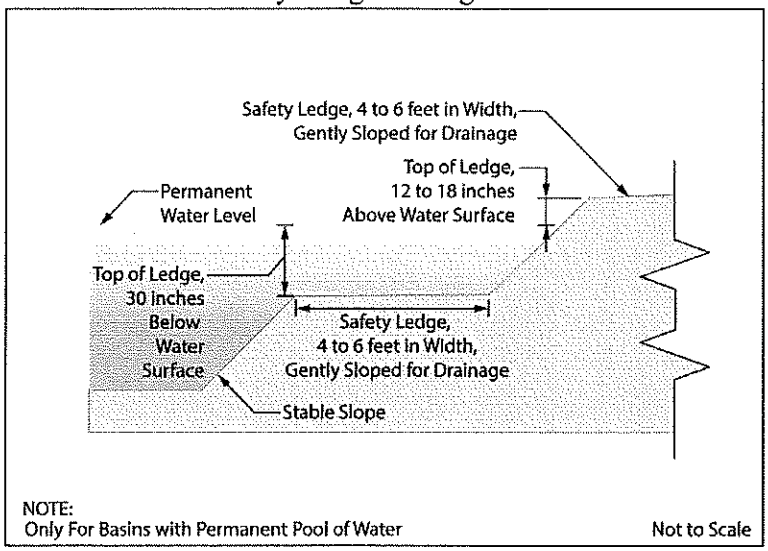
iii. In new stormwater management BMPs, the maximum interior slope for an earthen dam, embankment, or berm shall not be steeper than three horizontal to one vertical.

D. Variance or Exemption from Safety Standard

A variance or exemption from the safety standards for stormwater management BMPs may be granted only upon a written finding by the municipality that the variance or exemption will not constitute a threat to public safety.

E. Safety Ledge Illustration

Elevation View –Basin Safety Ledge Configuration



§194-100. Requirements for a Site Development Stormwater Plan.

A. Submission of Site Development Stormwater Plan

1. Whenever an applicant seeks municipal approval of a development subject to this ordinance, the applicant shall submit all of the required components of the Checklist for the Site Development Stormwater Plan at §194-100C below as part of the submission of the application for approval.

2. The applicant shall demonstrate that the project meets the standards set forth in this ordinance.

3. The applicant shall submit five (5) copies of the materials listed in the checklist for site development stormwater plans in accordance with §194-100C of this ordinance.

B. Site Development Stormwater Plan Approval

The applicant's Site Development project shall be reviewed as a part of the review process by the municipal board or official from which municipal approval is sought. That municipal board or official shall consult the municipality's review engineer to determine if all of the checklist requirements have been satisfied and to determine if the project meets the standards set forth in this ordinance.

Submission of Site Development Stormwater Plan Checklist

The following minimum information shall be required:

1. Topographic Base Map

The reviewing engineer may require upstream tributary drainage system information as necessary. It is recommended that the topographic base map of the site be submitted which extends a minimum of 200 feet beyond the limits of the proposed development, at a scale of 1"=200' or greater, showing 2-foot contour intervals. The map as appropriate may indicate the following: existing surface water drainage, shorelines, steep slopes, soils, erodible soils, perennial or intermittent streams that drain into or upstream of the Category One waters, wetlands and flood plains along with their appropriate buffer strips, marshlands and other wetlands, pervious or vegetative surfaces, existing man-made structures, roads, bearing and distances of property lines, and significant natural and manmade features not otherwise shown.

2. Environmental Site Analysis

A written and graphic description of the natural and man-made features of the site and its surroundings should be submitted. This description should include a discussion of soil conditions, slopes, wetlands, waterways and vegetation on the site. Particular attention should be given to unique, unusual, or environmentally sensitive features and to those that provide particular opportunities or constraints for development.

3. Project Description and Site Plans

A map (or maps) at the scale of the topographical base map indicating the location of existing and proposed buildings roads, parking areas, utilities, structural facilities for stormwater management and sediment control, and

other permanent structures. The map(s) shall also clearly show areas where alterations will occur in the natural terrain and cover, including lawns and other landscaping, and seasonal high groundwater elevations. A written description of the site plan and justification for proposed changes in natural conditions shall also be provided.

4. Land Use Planning and Source Control Plan

   This plan shall provide a demonstration of how the goals and standards of §194-94 through §194-96 are being met. The focus of this plan shall be to describe how the site is being developed to meet the objective of controlling groundwater recharge, stormwater quality and stormwater quantity problems at the source by land management and source controls whenever possible.

5. Stormwater Management Facilities Map

   The following information, illustrated on a map of the same scale as the topographic base map, shall be included:

   i. Total area to be disturbed, paved or built upon, proposed surface contours, land area to be occupied by the stormwater management facilities and the type of vegetation thereon, and details of the proposed plan to control and dispose of stormwater.
   ii. Details of all stormwater management facility designs, during and after construction, including discharge provisions, discharge capacity for each outlet at different levels of detention and emergency spillway provisions with maximum discharge capacity of each spillway.

6. Calculations

   i. Comprehensive hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in §194-95 of this ordinance.
   ii. When the proposed stormwater management control measures depend on the hydrologic properties of soils or require certain separation from the seasonal high-water table, then a soils report shall be submitted. The soils report shall be based on onsite boring logs or soil pit profiles. The number and location of required soil borings or soil pits shall be determined based on what is needed to determine the suitability and distribution of soils present at the location of the control measure.

7. Maintenance and Repair Plan

   The design and planning of the stormwater management facility shall meet the maintenance requirements of §194-101.

8. Waiver from Submission Requirements

   The municipal official or board reviewing an application under this ordinance may, in consultation with the municipality's review engineer, waive submission of any of the requirements in §194-100C (1) through §194-100C (6) of this ordinance when it can be demonstrated that the information requested is impossible to obtain or it would create a hardship on the applicant to obtain and its absence will not materially affect the review process.

§194-101. Maintenance and Repair.

A. Applicability

   Projects subject to review as in §194-91 of this ordinance shall comply with the requirements of §194-101B and §194-101C.

B. General Maintenance

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

   2. Maintenance Plans:

      a. The maintenance plan shall contain specific preventative maintenance tasks and schedules; cost estimates, including estimated cost of sediment, debris, or trash removal; and the name, address, and telephone number of the person or persons responsible for preventative and corrective maintenance (including replacement). The plan shall contain information on BMP location, design, ownership, maintenance tasks and frequencies, and other details as specified in Chapter 8 of the NJ BMP Manual, as well as the tasks specific to the type of BMP, as described in the applicable chapter containing design specifics.
      b. Stormwater facilities shall be constantly maintained by the owner or association to assure continual functioning of the system at design capacity and to prevent the health hazards associated with debris buildup and stagnant water. Maintenance responsibilities, inspection schedules and tasks will be clearly shown in the proposed plan. In no case shall water be allowed to remain in any facility long enough to trigger a mosquito breeding disease or cause any other type of health problem. The maintenance plan must include inspection routines to reduce the potential for extensive, difficult, and costly remedial or emergency maintenance efforts, including inspection checklists. Inspection checklists may address such items as:

(1) Obstruction of inlet devices by trash and debris;
(2) Evidence of erosion, sedimentation or instability;
(3) Malfunctioning of valves, gates, locks, access hatches or equipment;
(4) Deteriorated conduit outlet or seepage around outlet;
(5) Cracks or other deterioration of inlets, outlets, pipes, and conduits;
(6) Inadequate draining, clearing or clogging of control devices;
(7) Trimming, cutting or mowing of vegetation as required;
(8) Erosion and debris in emergency spillways and/or filter strips;
(9) Deterioration of downstream channels/conduits;
(10) Invasive or noxious weeds out of character with those specified;
(11) Saturated conditions or standing water;
(12) Animal burrowing; and
(13) Vandalism or other non-specified occurrences.

3. If the maintenance plan identifies a person other than the property owner (for example, a developer, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation of such person's or entity's agreement to assume this responsibility, or of the owner's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.

4. 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. The individual property owner may be assigned incidental tasks, such as weeding of a green infrastructure BMP, provided the individual agrees to assume these tasks; however, the individual cannot be legally responsible for all of the maintenance required.

5. If the party responsible for maintenance identified under §194-101B (3) above is not a public agency, the maintenance plan and any future revisions based on §194-101B (7) below shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

6. Preventative and corrective maintenance shall be performed to maintain the functional parameters (storage volume, infiltration rates, inflow/outflow capacity, etc.). of the stormwater management measure, including, but not limited to, repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.

7. The party responsible for maintenance identified under §194-101B (3) above shall perform all of the following requirements:

   i. maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders;
   ii. evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed; and
   iii. retain and make available, upon request by any public entity with administrative, health, environmental, or safety authority over the site, the maintenance plan and the documentation required by §194-101B (6) and §194-101B (7) above.
   iv. Beginning on January 31, 2019, make annual submissions to the municipality, no later than January 31st, containing excerpts of the detailed log of all preventative and corrective maintenance that was performed for the calendar year that just ended for all structural stormwater measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance related work orders.

8. The requirements of §194-101B (3) and §26-101B (4) do not apply to stormwater management facilities that are dedicated to and accepted by the municipality or another governmental agency, subject to all applicable municipal stormwater general permit conditions, as issued by the Department.

   https://www.njstormwater.org/maintenance_guidance.htm.

9. In the event that the stormwater management facility becomes a danger to public safety or public health, or if it is in need of maintenance or repair, the municipality shall so notify the responsible person in writing. Upon receipt of that notice, the responsible person shall have fourteen (14) days to effect maintenance and repair of the facility in a manner that is approved by the municipal engineer or his designee. The municipality, in its discretion, may extend the time allowed for effecting maintenance and repair for good cause. If the responsible person fails or refuses to perform such maintenance and repair, the municipality or County may immediately proceed to do so and shall bill the cost thereof to the responsible person. Nonpayment of such bill may result in a lien on the property.

C. Nothing in this subsection shall preclude the municipality in which the major development is located from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53

§ 194-102. Violations and penalties.

A. Fines.

(1) Any violation of any provision of this chapter shall be punishable as provided in Chapter 1, Article II, General Penalty, of the Code of the Borough of Netcong. The following individuals shall be subject to potential punishment:

(a) The owner, general agent, contractor or occupant of a building, premises or part thereof where such a violation has been committed or does exist; and

(b) Any agent, contractor, architect, engineer, builder, corporation or other person who commits, takes part or assists in the violation.

(2) Each day that a violation continues shall constitute a separate and distinct offense.

(3) The imposition of penalties herein shall not preclude the municipality or any other person from instituting an action to prevent an unlawful construction, reconstruction, alteration, repair, conversion, or use, or to restrain, correct or abate a violation, or to prevent the illegal occupancy of a building, land or premises.

B. Injunctive relief. In addition to the foregoing, the municipality may institute an action for injunctive relief.

§ 194-103. When effective.

This chapter shall take effect immediately upon the approval by the county review agency, or 60 days from the receipt of the ordinance by the county review agency if the county review agency should fail to act.

SECTION 2. This Ordinance may be renumbered for codification purposes.
SECTION 3. All Ordinances of the Borough of Netcong which are inconsistent with the provisions of this Ordinance are hereby repealed to the extent of such inconsistency.

SECTION 4. If any section, subsection, sentence, clause or phrase of this Ordinance is, for any reason, held to be unconstitutional or invalid, such decision shall not affect the remaining portions of this Ordinance.

NOTICE IS HEREBY GIVEN, that the foregoing Ordinance was introduced in writing at a meeting of the Borough Council of the Borough of Netcong, County of Morris and State of New Jersey, held on the 14 day of January , 2020, introduced and read by title and passed on the first reading and that the said Governing Body will further consider the same for second reading and final passage thereon at a meeting to be held on the 11 day of February , 2020, at 7:30 p.m., prevailing time, at the Municipal Building in said Borough, at which time and

place a public hearing will be held thereon by the Governing Body and all persons and citizens in interest shall have an opportunity to be heard concerning same.

BOROUGH OF NETCONG
COUNTY OF MORRIS
STATE OF NEW JERSEY

ATTEST:

By: _____
Joseph A. Nametko, Mayor

_____
Cynthia Eckert, Borough Clerk

APPENDIX B

1.0 Introduction

A population constraints analysis is essentially a build-out analysis to determine the character of the planning area and in this study, the ultimate volume of wastewater generated by future residents. A build-out analysis is a planning tool used to determine the amount of development that can occur under existing zoning and environmental land use controls. It must be understood that a build-out analysis is theoretical based on the potential acreage and number of units that could be built on land that is not in some way protected. This assumes that all unprotected land is developed to its full potential and would occur over an extended period of time. This theoretical full build out is useful as a reference point to determine the nature of development that could be achieved if existing zoning and environmental land use controls remain in effect. The full build out may never be achieved and if it is approached, it would take place over an extended period of time.

For this analysis the existing wastewater flow from the borough will be added to the potential flow from currently undeveloped, unconstrained lands. No assessment of the flow from existing developed lands was included in this analysis. Undeveloped lands throughout the borough, including fill in lots within the developed portions of the boroughs, which were not encumbered by environmental constraints, were included in the pool of eligible lands for development.

2.0 Build-out Analysis Methodology

The first step in creating the build-out model is to identify all lands available for development within the planning area. The planning area for this build-out analysis is the Borough of Netcong. In order to determine the land available for development, lands that are already sewered, open space or lands undevelopable for environmental reasons (e.g. wetlands, steep slopes, flood plains, or stream corridors) are identified and mapped on Borough tax maps. The Borough of Netcong provided a list of all properties within the borough which are currently paying for wastewater treatment and are presumably contributing to the current wastewater flow. The remaining lots were checked to determine if they were developed or if they were constrained. All undeveloped and unconstrained lots which were of sufficient size to meet the zoning criteria of the Borough were deemed available for development and included in this analysis.

Constraints rendering land as undevelopable included in this analysis include:

- Wetlands – Freshwater wetlands, both forested and emergent, as depicted in the New Jersey Department of Environmental Protection (NJDEP) Landscape Project (Version 2). Wetlands within the project area are identified as Rank 1 and Rank 2 indicating that there are no threatened and endangered species associated with these wetlands. Therefore all wetlands within the project area include a 50 foot wetland transition area. Map 6 depicts the location of wetlands within the project area.

- Water Bodies – Water bodies and areas classified as State open waters were excluded as developable areas. There is one water body within the project area which is Lake Musconetcong. Map 5, Streams and Open Waters shows the location of the lake.

- Rivers and Stream Corridors – Rivers and stream corridors include all streams as mapped by the NJDEP Landscape Project (Version 2). Pursuant to N.J.A.C. 7:9B, streams are classified according to their water quality. Streams within the project area are identified as FW2 waters. The designated uses for all FW2 waters are:

    - Maintenance, migration and propagation of the natural and established biota;
    - Primary and secondary contact recreation;
    - Industrial and agricultural water supply;
    - Public potable water supply after conventional filtration treatment, (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection; and
    - Any other reasonable uses.

  In addition, waters are classified as to their ability to support trout. Some waters are designed as non-trout waters (NT). These are waters which do not typically support trout. A second classification is trout maintenance waters (TM). These are waters which are capable of supporting trout on a put and take basis but do not support breeding populations of trout. Trout production waters (TP) are those streams designated at N.J.A.C. 7:9B-1.15(b) through (g) for use by trout for spawning and nursery purposes during their first summer.

  The Musconetcong River and Wills Brook are the only streams within the project area (Map 5). Table 1 lists the surface water classifications of each river.

Table 1
Classification of Streams with the Project Area

Stream	Classification
Musconetcong River	FW2-TM
Wills Brook	FW2-TM

- Flood Hazard Areas – Those areas mapped by the Federal Emergency Management Agency (FEMA) as depicted on the NJDEP Landscape Project (Version 2) as being within the 100 year flood plain of the various rivers and streams within the project area have been included as undevelopable lands. The FEMA mapped 100 year flood plains are shown on Map 6.

- Steep Slopes – Slopes in excess of 15% are typically considered by NJDEP as undevelopable. Within the project area the US Department of Agriculture USDA), Soil Conservation Service, soil maps for Morris County and the USDA SURGO soil survey as depicted on the NJDEP Landscape Project (Version 2), indicate that there are two (2) soils types which have slopes in excess of 15%. The areas constrained by steep slopes are shown on Map 10. These soils types include:

    - Rockaway extremely stony sandy loam, 15 to 25% slopes (RrD);
    - Rockaway -Rock outcrop complex, 25 to 45% slopes (RsE);

    As the planning area is within the Highlands Region, and the Highlands Council has identified as areas with slopes greater than 15% as in need of protection, the Highlands Council is identifying area which will require future protection. The Council is currently preparing 2 foot contour interval mapping for the Highlands Region.

    The mapping requirements in the instructions for the preparation of a Wastewater Management Plan do not at this time require areas of steep slopes to be identified. In anticipation of the Highlands Councils regulations, the build-out mapping analysis includes soil types which have slopes greater than 15%. Until such time that more accurate mapping is available and the Highlands Regulations promulgated, all lots within areas with soil types with slopes in excess of 15% have been included in the build-out analysis in accordance with local zoning. This Wastewater Management Plan will be revised, if necessary, once the Highlands information is available.

- Dedicated Open Space – Dedicated open space includes lands set aside as parks and preserves. These areas are not available for development and are permanently set aside for both active and passive recreation. Open space areas within the project area as depicted on the NJDEP Landscape Project (Version 2) are shown on Map 7.

- Threatened and Endangered Species Habitat – Threatened and endangered aquatic and semi aquatic species habitat is included in the habitat protected by those lands excluded as freshwater wetlands. The NJDEP Landscape Project (Version 2) classifies habitat using a five (5) tiered approach.

    - Rank 1 habitat shows no exceptional qualities in their ability to support threatened and endangered species.
    - Rank 2 habitat has certain habitat qualities needed to support threatened and endangered species, however, there is no evidence that these species utilize this habitat;
    - Rank 3 habitat supports at least one documented State listed threatened species;

- Rank 4 habitat supports at least one documented State listed endangered species; and
- Rank 5 habitat supports a documented Federally listed threatened or endangered species

Within the project area there are no emergent or forested wetlands with a rank greater than 2. The lands associated with all wetlands and potential threatened and endangered species habitats have been removed from the pool of developable lands with the other wetlands.

Additional protection is afforded to certain species including the bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*) and wood turtle (*Clemmys insculpta*). The NJDEP Landscape Project (Version 2) utilizes habitat models to determine the extent of suitable habitat for these species. The NJDEP Landscape Project (Version 2) does not indicate bald eagle, falcon or wood turtle habitat within the project area. Threatened and endangered species habitat and Natural Heritage Priority Sites are shown on Map 9.

3.0 Zoning Constraints

The final aspect of the build-out analysis is to examine the development constraints that are imposed under the existing zoning regulations. Each of the towns has separate zoning regulations. The Borough of Netcong has 10 different zoning areas. The zoning classifications are as follows:

- R-1 – Single Family Residential with minimum lot size of 6,000 ft^2;
- R 1A – Single family residential with minimum lot size of 5,000 ft^2;
- R 2 – Single family residential with minimum lot size of 8,000/6,000 ft^2;
- R 4 – Garden Apartment with minimum lot size of 20,000 ft^2;
- B – Commercial Business minimal lot size of 6,000 ft^2;
- B-C – Borough Center;
- I-1 – General Industrial with a minimum lot size of 40,000 ft^2;
- I-2 – Limited Industrial with a minimum lot size of 30,000 ft^2;
- I-3 - Limited Industrial and Commercial with a minimum lot size of 4 acres; and
- I-4 - Industrial and Commercial with a minimum lot size of 30,000 ft^2.

The unconstrained area of land in each of these zones was tabulated. The total number of dwelling units was multiplied by 300 gallons per day (GPD) per household. The total number of gallons per day an additional, constrained wastewater flow from the theoretical built out is listed in Table 1.

For commercial development the yield is determined by the Maximum Floor Area Ratio and the Maximum Building Percent Coverage. The Borough Zoning Area and Bulk Schedule define these requirements by commercial zone. Once the total number of

square feet of potential floor space is calculated, the area is multiplied by 0.1 gallons per square foot to determine the potential commercial flows from build out of unconstrained lands.

Residential and commercial flows are summed which result in the total additional wastewater flow from build out. The total additional wastewater at the total build out of the Borough of Netcong is 10,650 GPD

This additional build out wastewater flow is then added to the existing flow from each town to give a total flow from the town.

4.0 Redevelopment Projects

The Borough of Netcong has entered into a redevelopment agreement with Rosewood Netcong LLC for the redevelopment adjacent to and around the Borough's train station. The redevelopment will create a Borough Center. The redevelopment consists of Block 19, Lots 20, 20.01, 22, 28, 29, 30, 34.02, 35, 36, 38 and a portion of 37. The project consists of 201 residential units, 7,000 square feet of office and 13,200 square feet of retail. The residential units include 24 COAH units and a total of 30 age restricted housing units. The 201 residential units include mixed duplex houses, townhouses, condominium town homes and condominium flats (See Attachment C).

The project flow from this redevelopment project is as follows:

201 residential units (assuming all 3 bedroom or larger) @ 300 GPD = 60,300 GPD
20,200 square feet of office and retail @ 0.100 GPD per square foot = 2,020 GPD
Total project flow = 62,320 GPD

In addition to the above Rosewood redevelopment project the Borough is also proposing redevelopment in the vicinity of Stoll Street. The project plans for this redevelopment project have been developed by Schoor Depalma Engineers and Consultants and consists of up to 112 units affordable units.

The project flow from the Stoll Street redevelopment project, assuming all 3 bedroom or larger) @ 300 GPD = **33,600 GPD**

5.0 Conclusions

Total additional build out flow from the Borough including the Station Area Redevelopment Project is 106,570 GPD. The average metered flow between March 2007 and February 2008 from the Borough is 350,000 GPD. Total constrained wastewater flow from the Borough of Netcong is 456,570 GPD.