



## New Jersey Green Infrastructure Municipal Toolkit

# Municipal Stormwater Management Plan: Green Infrastructure Language Recommendations

*This document was created for New Jersey Future by Clarke Caton Hintz and Princeton Hydro.*

All municipalities must adopt a Municipal Stormwater Management Plan (MSWMP). This plan is an important vehicle by which to stress the importance and promote the adoption, adaptation and integration of Green Infrastructure stormwater management techniques into the municipality's land development (zoning) and stormwater management ordinances. [Appendix C](#) of the New Jersey Stormwater Best Management Practices Manual (BMP Manual) provides a sample MSWMP. The sample MSWMP is intended to assist municipalities in the preparation of their own individual MSWMP.

Too often, municipalities simply copy and adopt the sample plan verbatim. While the sample plan provides valuable guidance, it is not a "one size fits all" document. NJDEP encourages cities and towns to use the sample plan as a starting point -- a technically rich platform upon which to base the municipality's individual plan. Municipalities may modify the sample MSWMP to promote structural and non-structural Green Infrastructure SWM practices, and to integrate such practices as prominent elements of a municipality's Land Development and Stormwater Management Ordinances.

### Consider including the following goals in the "Goals" section of your MSWMP:

- Emphasize the benefits of Low Impact Development and Non-Structural stormwater management;
  - *LID seeks to reduce and/or prevent adverse runoff impacts through sound site planning and both nonstructural and structural techniques that preserve or closely mimic the site's natural or pre-developed hydrologic response to precipitation. Rather than responding to the rainfall-runoff process like centralized structural facilities, low impact development techniques interact with the process, controlling stormwater runoff and pollutants closer to the source and providing site design measures that can significantly reduce the overall impact of land development on stormwater runoff. As such, low impact development promotes the concept of designing with nature.<sup>1</sup>*
- Utilize green infrastructure related stormwater management as a means of protecting the municipality's natural resources;
- Incorporate green infrastructure in every new development and redevelopment project;
- Provide performance standards for green infrastructure stormwater management while keeping with N.J.A.C. 7:8.2 including recharge, pollutant load reduction, runoff volume reduction, flood prevention and flood mitigation;

<sup>1</sup> New Jersey Best Management Practices Manual, February 2004, Chapter 2.



- Limit impacts attributable to the transfer of pollutants via stormwater runoff by encouraging the implementation and maintenance of green infrastructure to ensure the quantity of runoff is reduced and to minimize flooding and flood related damages.
- Identify green infrastructure stormwater management as the primary means by which the municipality seeks to manage stormwater runoff.

## Using Green Infrastructure Stormwater Management Techniques to Meet or Exceed NJDEP Stormwater BMP Performance Requirements

The current performance standards established within the State's stormwater management rules (NJAC 7:8) and discussed within the NJDEP's Stormwater Best Management Practices (BMP) Manual (NJDEP 2010) focus on three key requirements for new development:

- Attenuation of post-development peak flows for the 2, 10 and 100-year events,
- Post-development reduction of total suspended solids by 80%, and
- Maintenance of a site's pre-development recharge volume (i.e., no net change in recharge volume).

Green infrastructure (GI) BMPs have the ability to meet and exceed each of the State's minimum BMP performance requirements. GI BMPs should therefore be identified and emphasized in a municipality's stormwater management plan (MSWMP) as the preferred means of not only meeting but exceeding the minimum BMP performance requirements. Suggested goals that could be integrated into a MSWMP include, but are not limited to, the following:

**1. Increase TSS Removal Rate.** Set the minimum post-development TSS removal rate for new development at 90% TSS. As per Chapter 4 of the NJDEP BMP Manual, Bioretention and Created Wetland BMPs have the ability to achieve 90% TSS removal without the use of any other BMP. Although the NJDEP only sets a TSS removal standard of 50% for sites undergoing redevelopment, a municipality could set the minimum post-development TSS removal rate for redevelopment at 90% TSS. Once again, as per Chapter 4 of the NJDEP BMP Manual, Bioretention and Created Wetland BMPs have the ability to achieve 90% TSS removal without the use of any other BMP.

**2. Set Standard for Removal of Nutrients.** The Stormwater Rules do not include any minimum BMP performance requirements for the removal of nutrients. Nutrient loading associated with non-point source pollution, the majority of which is conveyed by stormwater runoff, is recognized by the USEPA to be responsible for the majority of the water quality and eutrophication impairments affecting the waters of the United States. A goal, particularly for municipalities located within the watershed of a Category 1 water, the Highlands, Pinelands or Barnegat Bay, or an approved NJDEP Total Maximum Daily Load (TMDL) watershed would be to include within the MSWMP nutrient performance standards for the removal of total phosphorus (TP) and total nitrogen (TN). Although not a regulatory requirement, the NJDEP, within both Chapters 4 and 9 of the BMP Manual, identify the TP and TN removal rates for various BMPs. The NJDEP assigned TP and TN removal rates for various GI SWM BMPs as follows:

<b>BMP</b>	<b>TP</b>	<b>TN</b>
<b>Bioretention Basin/Rain Garden</b>	60	30
<b>Created Wetland</b>	50	30
<b>Infiltration Basin</b>	60	50
<b>Vegetative Filter Strip</b>	30	30

Thus, using the above removal rates a municipality could establish within their MSWMP a performance goal specific for TP and TN removal and encourage the use of various GI BMPs used independently or in combination to meet these performance standards.

**3. Manage Runoff Volume.** As noted, the existing NJDEP stormwater management rules only regulate post-development runoff rates not runoff volume. Managing runoff volume as opposed to runoff rates is a better way of controlling non-point source pollutant loading, flooding, sedimentation, and scour and erosion damage to streams and waterways. GI SWM BMPs have the ability to both manage and reduce post-development flow rates and runoff volume. As such, a goal of a MSWMP should be a reduction in post-development runoff volume. This can be applied to both new development and redevelopment sites. Suggested target goals include:

- No off-site discharge of runoff for the 1-year event (~2.75"/24 hrs),
- No off-site discharge for rainfall events generating 1" of runoff, or
- No off-site discharge of the initial 0.5" of runoff generated by any storm event.

**4. Permit Pervious/Porous Pavement as Pervious Surface.** By means of their runoff infiltration capabilities, GI SWM practices can be part of the strategy used to meet a site's post-development recharge requirements. This is especially true for pervious/porous pavement and permeable pavers. Although the NJDEP recognizes the recharge role of both pervious/porous pavement and permeable pavers, NJDEP states that porous pavement must be "counted as impervious surface toward the threshold of jurisdiction for the applicability of the Stormwater Management rules and the applicability of the water quality standards". However, a municipality, as a means of encouraging the greater widespread use of pervious/porous pavement could waive this stipulation, given that the pervious/porous pavement meets specific design specifications and its installation is accompanied by a well-defined maintenance plan and schedule. As such, a goal of a MSWMP could be the promotion of pervious/porous pavement and permeable pavers as a means of satisfying a site's post-development recharge requirements, including development incentives to encourage their use relative to conventional paved surfaces.