

Low Impact Development/Green Infrastructure for Stormwater Management in New Jersey's Highlands Region

New Jersey's Pinelands and Highlands Regions are considered special resource areas. Each has a regional master plan – the Pinelands Comprehensive Management Plan and the [Highlands Regional Master Plan](#) – that include land-use and conservation requirements to protect water quality and supply. Here is guidance about improving ordinances if you live in a Highlands municipality.

Stormwater Ordinance information:

Highlands regulations specifically defer to the NJDEP Stormwater Management Rule: NJAC 7:8 – with two exceptions: (1) there is a 125% recharge requirement in areas within an identified Current Deficit Area and (2) there are specific requirements for mitigation. These requirements can be found in Appendix E of the [Highlands Region Stormwater Management Program Guidance](#) document.

Any Highlands municipality may adopt more stringent stormwater management requirements, as found in the [Sustainable Jersey model stormwater ordinance](#).

Highlands towns seeking Regional Master Plan Conformance are required to amend their stormwater ordinance as described in [Appendix D](#) of the Highland's Council's "Highlands Region Stormwater Management Program Guidance" document.

Land Use / Zoning Ordinance information:

Major Development: the Highlands Regional Master Plan (RMP) defines "major development" as follows:

"Major Highlands Development" – Except as otherwise provided pursuant to subsection a. of section 30 of the Highlands Act, Major Highlands Development means (1) any non-residential development in the preservation area; (2) any residential development in the preservation area that requires an environmental land use or water permit or that results in the ultimate disturbance of one acre or more of land or a cumulative increase in impervious surface by one-quarter acre or more; (3) any activity undertaken or engaged in the preservation area that is not a development but results in the ultimate disturbance of one acre or more of forested area or that results in a cumulative increase in impervious surface by one-quarter acre or more on a lot; or (4) any capital or other project of a State entity or local government unit in the Preservation Area that requires an environmental land use or water permit or that results in the ultimate disturbance of one acre or more of land or a cumulative increase in impervious surface by one-quarter acre or more. Major Highlands development shall not mean an agricultural or horticultural development or agricultural or horticultural use in the preservation area.

Any Highlands municipality may choose to define "major development" more strictly, with a smaller area of disturbance and/or a smaller area of new impervious cover.

The Highlands RMP contains several policies, objectives and programs that directly relate to the incorporation of low impact development (LID) measures for stormwater management and protection of resources. The following are suggested ways that Highlands municipalities can improve land use ordinances:

Highlands Open Water Buffers

Objective 1D4g: Encourage opportunities to restore and enhance Highlands Open Waters buffers of all zones in both the Preservation and Planning Areas. Restoration activities shall be targeted to ensure improvements to one or more of the functional values that the buffers provide while ensuring that there is no net loss of any of the functional elements, in compliance with Objective 1D4h. Specifically during site redevelopment, techniques may include, but are not limited to: disconnecting the direct drainage of impervious surfaces to Highlands Open Waters; retrofitting of stormwater management facilities to achieve the water quality, quantity, and recharge standards of the Stormwater Management Rules as specified in N.J.A.C. 7:8; reducing the temperature of stormwater discharges; and minimizing concentrated stormwater discharges through or into protection buffers.

Net Water Availability

Objective 2B4c: Establish and implement mandatory stormwater reuse for recreational and other non-agricultural irrigation, as well as other non-potable water purposes to minimize both the volume of stormwater discharges and water withdrawals for these purposes.

Prime Groundwater Recharge Areas

Objective 2D3a: Establish Low Impact Development and other Best Management Practices, technical guidelines and procedures to protect, restore and enhance Prime Ground Water Recharge Areas, to maximize the protection of natural ground water recharge and to minimize the need for engineered recharge methods for the purpose of complying with N.J.A.C. 7:8 (Stormwater Management Rules).

Objective 2D3b: Establish model municipal development regulations and master plan elements for the protection of Prime Ground Water Recharge Areas, through mechanisms that both complement and supplement the provisions of N.J.A.C. 7:8 (Stormwater Management Rules).

Protection, Restoration and Enhancement of Water Quality- Wellhead Protection Areas

Objective 2H4b: Encourage stormwater reuse for non-agricultural irrigation and other non-potable water purposes to minimize the volume of stormwater discharges (other than from clean sources) within a Tier 1 or Tier 2 Wellhead Protection Area.

Future Land Use: Subpart E - Smart Growth

Low Impact Development is an element of smart growth that achieves improved protection of environmental resources. It is an environmentally sensitive approach to land use planning that uses a variety of landscape and design techniques to manage development activities to mitigate potential adverse impacts on the natural environment. Low Impact Development encompasses a broad array of development and management techniques and can be implemented in resource management practices, stormwater management methods, and low impact “green” construction activities. Low Impact Development for resource management is applied as Best Management Practices and is geared toward protection and conservation of the resources. Low Impact Development for stormwater management is aimed at capturing rainfall onsite, filtering it through vegetation and allowing it to recharge ground water. Low Impact Development treats stormwater as a resource. Low Impact Development for site design includes stormwater management techniques as well as other measures designed to reduce site disturbance, limit impervious coverage and utilize the natural features of a site to guide site development. Similar Low Impact Development techniques may be applied for each of these purposes with the overall goal of minimizing adverse impacts of the activity.

Policy 6N2: To require municipalities and counties to adopt stormwater management Low Impact Development standards to preserve or mimic the natural hydrologic features and characteristics of the land.

Objective 6N2a: Implementation of on-site stormwater management features that maintain, restore and enhance the pre-existing natural drainage patterns of the site.

Objective 6N2e: Minimum requirements for use of grass channels, dry swales, wet swales, infiltration basins, bio-swales and water gardens, green roofs, and other low impact approaches to attenuate and control stormwater and provide multiple environmental benefits.

Program: Lake Management Area

Shoreland Protection Tier: 2. Where shorelines have already been hardscaped with bulkheads, riprap, or walls in the Lake Community Sub-Zone, encourage the creation of a vegetated filter strip along the shoreline to attenuate stormwater flow and minimize the potential for shoreline erosion.

Water Quality Management Tier: 1. All parcels of land proposed for development shall be improved with landscape or garden elements which retain stormwater. 2. Require for all new development (and encourage for existing development in the Lake Community Sub-Zone), that runoff from roofs, driveways and patios shall be directed into landscape or garden elements which retain and filter stormwater, or to infiltration practices. 3. Green roofs are strongly encouraged in all zones to clean and slow the release of stormwater. 6. To the maximum extent practicable in all zones the stormwater management train should maximize the use of swales with natural vegetation or constructed wetlands and discharge through a constructed wetland or other channel that maximizes aeration and cleaning of the water.

Low Impact Development Program

See pp. 342 – 349 of the [Highlands Regional Master Plan](#)