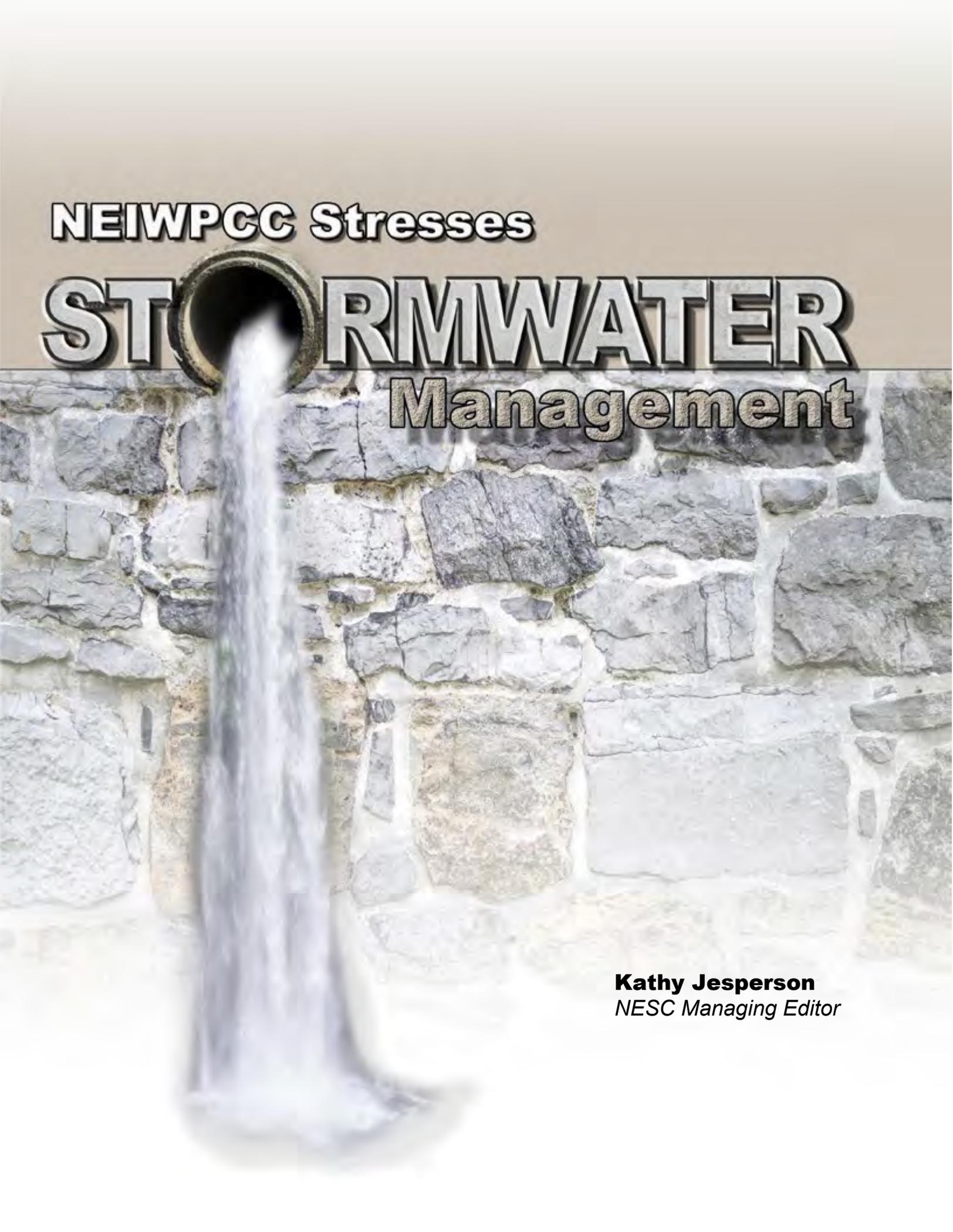


**NEIWPCC Stresses**

A photograph of a stone wall with a pipe opening. Water is flowing out of the pipe, creating a blurred, vertical stream. The wall is made of grey and brown stones with white mortar. The background is a light, gradient sky.

# **STORMWATER Management**

**Kathy Jesperson**  
*NESC Managing Editor*

Because it may contain pollutants from a number of sources, stormwater runoff can impair water quality and that can lead to problems. Runoff from rainwater or snowmelt that does not soak into the ground usually travels over impervious surfaces such as parking lots, roadways, or rooftops, picking up pollutants along the way. Once it reaches lakes, ponds, stream, rivers or other water bodies it often contains chemicals, sediments, nutrients, and pathogens. Because of this threat to fresh water sources, stormwater management is especially important.

Organizations and agencies that provide support are a critical part of stormwater management. One such organization is the New England Interstate Water Pollution Control Commission (NEIWPCC).

To engage its member states in the stormwater management process, NEIWPCC has established a program to provide stormwater management support to its members in Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.

NEIWPCC's Stormwater Phase II Workgroup meets three times a year and helps its members meet the stringent and complex requirements that the U.S. Environmental Protection Agency (EPA) has set for stormwater.

"The workgroup is important because it provides a way for everyone to stay in contact and strengthens the stormwater programs within the member states," says Monica Kacprzyk, NEIWPCC's stormwater workgroup coordinator.

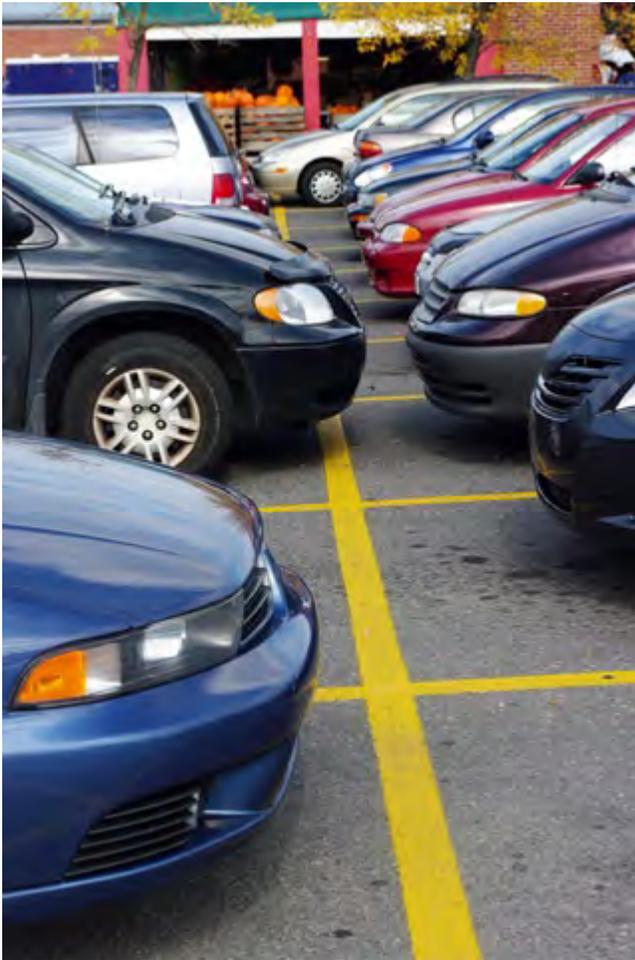
### **NEIWPCC Helps Members with Phase II**

The National Pollution Discharge Elimination System (NPDES) Stormwater Program was established in 1987 to aid in the monitoring and control of pollutants reaching surface waters via storm sewers. Phase I of the program required permit coverage for stormwater discharges from construction sites greater than five acres, 10 different categories of industrial activities, and municipal separate storm sewer systems (MS4s) serving populations of 100,000 or more. In December 2002, Phase II of the NPDES Stormwater Program went into effect, requiring permit coverage for construction activities on one to five acre sites, certain industrial facilities not covered by Phase I regulations, and small MS4s that are located in urbanized areas, as defined by the U.S. Census Bureau, or meet designation criteria established by EPA or states. NEIWPCC helps its member states get through the hurdles of all phases of stormwater management.

"We don't work directly with communities but some of our projects and products can help municipalities comply with stormwater regulations." says Kacprzyk.

Kacprzyk points out that NEIWPCC's stormwater products are created from research the organization does on its own or in collaboration with others. For instance, the NEIWPCC worked on a best management practices project with the University of New Hampshire (UNH).





### Assists UNH Stormwater Center with Project

“We worked with the UNH Stormwater Center on a project to assess the nutrient removal capacity of gravel wetlands as a stormwater best management practice (BMP),” says Kacprzyk.

“The testing done on a gravel wetland system during our collaboration with UNH led to gravel wetland systems being successfully installed in communities in New England. In Greenland, New Hampshire, a large gravel wetland is being used along with other BMPs (porous asphalt and sand filters) on a large commercial development site to reduce the pollution coming off the site to below pre-construction levels.”

The Greenland, New Hampshire project is a development that is located on a 56-acre parcel and includes three one-story retail buildings (Lowe’s Home Improvement, Target, and a supermarket), paved parking areas consisting of porous asphalt and non-porous pavements, landscaping areas, a large gravel wetland, and advanced stormwater management facilities.

The case study notes that during the shopping center’s permitting stage, concerns arose about potential adverse water quality impacts from the project. The development would increase the amount of impervious surface on the site resulting in a higher amount of stormwater runoff compared to existing conditions.

The shopping center site has two porous asphalt drainage systems—one in the main parking lot and one in the eastern parking area—that serve to attenuate peak flows, while the

aggregate reservoirs, installed directly below the two porous asphalt placements, serve as storage for the underlying sand filter.



*Aerial view of the Greenland, New Hampshire project. Courtesy of the University of New Hampshire Stormwater Center*



remove pollutants as well as mitigate the thermal impacts of stormwater.

Water quality monitoring results show that the stormwater management systems are working well, and effluent pollutant levels leaving the site at the gravel wetland are typically at or below ambient stream concentrations across a wide range of contaminants.

### NEIWPCC Develops Stormwater Manual

In addition to this project, NEIWPCC also has developed an Illicit Discharge Detection and Elimination Manual, a resource to help municipalities comply with the requirements of EPA's NPDES Phase II stormwater regulations.

"The manual covers the first steps to develop a stormwater program," explains Kacprzy, adding that it will help municipalities understand their responsibilities.

Runoff from a sand filter, which itself provides extended detention and filtration, flows through perforated underdrain pipes that converge to a large gravel wetland on the west side of the site. The gravel wetland is designed as a series of flow-through treatment cells providing an anaerobic system of crushed stone with wetland soils and plants. This innovative low impact development design works to

## More Information about NEIWPCC

 The image shows the cover of a report titled "Greenland Meadows LID Case Study: Water Quality". The cover features the NEIWPCC logo (a stylized 'SC' in a circle) and the title. Below the title is an aerial photograph of a large, modern retail shopping center with a complex roof structure. To the right of the photo is a text box with the following content:
 

**Greenland Meadows** is a retail shopping center built in 2008 by Haviton, Mass.-based New England Development in Greenland, NH.

The development is located on a 50-acre parcel and includes three one-story retail buildings, Haviton's Home Improvement, Target, and a supermarket, paved parking areas, a large gravel wetland, as well as advanced stormwater management facilities.

The total impervious area of the development - mainly from rooftops and non-paved parking areas - is approximately 25.6 acres, considerably more as compared to predevelopment conditions. Prior to this development, the project site contained an abandoned 150-year old ball field with the majority of the property vegetated with grass and trees.

Huntington, Mass.-based Terra Tech, Inc. provided site drainage engineering, which included the design of two porous asphalt infiltrations covering a total of 4.3 acres along with a sub-surface gravel wetland. The University of New Hampshire (UNH) Stormwater Center provided design guidance, LID project review and oversight with the LID infiltrations.

*Greenland Meadows features the largest porous asphalt and gravel wetland installation in the Northeast.*

NEIWPCC IS A 501(c)(3) NON-PROFIT ORGANIZATION. LISTING THE ECONOMIC BENEFITS OF LOW IMPACT DEVELOPMENT AND COMMUNITY CHECKS CAN BE FOUND AT <http://www.unh.edu/unhsc/>

The stormwater program is one of many that NEIWPCC offers its member states. The organization also supplies information about groundwater/source water protection, onsite systems, underground storage tanks, and many other issues important to communities. For more information about NEIWPCC, go to <http://www.neiwpcc.org>.

For a copy of the Illicit Discharge Detection and Elimination Manual, go to NEIWPCC's publication page at <http://neiwpcc.org/publications.asp>.

For a copy of the "Greenland Meadows LID Case Study: Water Quality," go to <http://www.unh.edu/unhsc/sites/unh.edu.unhsc/files/UNHSC%20GrMeadows-WQ%20Fact%20Sheet%205-11.pdf>

To see EPA stormwater case studies, go to <http://water.epa.gov/polwaste/npdes/stormwater/index.cfm>.