

# Innovative Stormwater Treatment in Ohio

## Project Location

Old Woman Creek National Estuarine Research Reserve, Ohio

## Project Lead

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## Targeted End Users and Products

- [Final project report](#)
- [Innovative Stormwater Solutions for Ohio: Case Studies of LID Implementation and Performance 2015](#)
- [Bioretention design updates](#)
- [Assessment of Collaboration](#)
- [Assessment of Ohio Stormwater Management](#)

## Project Partners

- [Old Woman Creek Reserve](#)
- [Chagrin River Watershed Partners](#)
- [Consensus Building Institute](#)
- [Erie Soil and Water Conservation District](#)
- [North Carolina State University](#)
- [Ohio Department of Natural Resources, Division of Wildlife](#)
- [Ohio Department of Natural Resources, Division of Soil and Water Resources](#)

### About the Science Collaborative

The National Estuarine Research Reserve System's Science Collaborative supports collaborative research that addresses coastal management problems important to the reserves. Learn more at [www.nerrs.noaa.gov](http://www.nerrs.noaa.gov).

## Overview

Stormwater runoff from impervious surfaces severely impacts Ohio's coastal communities and environments. It erodes streams, overloads drainage systems and water treatment facilities, increases flooding, impairs water quality, and degrades habitats. The severity of these impacts has increased with the number of heavy storms in Ohio, which are up 31 percent over the past 50 years. Traditional "pipe and pond" approaches to stormwater management do not adequately prevent flooding or protect water quality. Fortunately, there are low-impact development (LID) alternatives that promote infiltration of rainwater where it falls, thereby reducing floods and promoting clean water. The Old Woman Creek reserve worked with the Chagrin River Watershed Partners and other partners to provide much-needed local demonstration of different LID stormwater treatment techniques and promoted the use of these approaches throughout the state.

## Project Benefits

- The stormwater treatment demonstration sites proved LID techniques are applicable locally and contributed to the improvement of environmental conditions—the bioretention and permeable pavement test sites, for example, are showing runoff reductions of up to 50 percent.
- Case studies detailing the design, construction, and maintenance needs of each treatment system and fact sheets to capture testing and comparison of the systems.
- Monitoring data to locally validate stormwater models that can now be used to examine the effects of design decisions on performance and to better understand how climate change may impact stormwater management in the future.
- Technical guidance on stormwater projects for communities throughout Ohio, helping to expand awareness of LID options.
- New partnerships among environmental professionals, municipal officials, researchers, construction personnel, government agencies, and community members throughout Ohio fostered through the collaborative approach used by the project.
- Shared findings through presentations at several conferences and with the Great Bay, ACE Basin, and North Inlet-Winyah reserves through a knowledge transfer workshop.

## Project Approach

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The Old Woman Creek reserve worked with the Ohio Department of Natural Resources, Chagrin River Watershed Partners, Erie Soil and Water Conservation District, North Carolina State University, and the Consensus Building Institute to design and implement this project.

- **Design and Installation:** The team designed and installed six LID stormwater systems, conducted on-site monitoring of stormwater hydrology and site characteristics to address questions about the runoff reduction performance of stormwater system, collected information about systems' design, cost, and maintenance needs, and combined monitoring data with stormwater modeling to assess the performance of systems under current climate conditions and future precipitation scenarios.
- **Stakeholder Engagement:** The team used a collaborative learning approach to engage stormwater professionals throughout the project. They organized a collaborative learning group to provide input on demonstration site selection, stormwater system design, monitoring, and communication of results. This group included representatives from Ohio EPA, local government officials, consulting engineers, and the Northeast Ohio Regional Sewer District.
- **Surveys and Feedback:** The engagement process and feedback from stakeholders were crucial in building relationships, guiding the project's direction, and making sure the work specifically addressed local needs and management challenges. The team conducted surveys periodically to get feedback from collaborative learning group members on their experience with the collaborative project. In a 2013 survey, 100 percent of stakeholders indicated that participating in the project was a good use of their time.

