

An Integrated Assessment



PROJECT IMPACTS

REIN IN THE RUNOFF

A COMPLEX PROBLEM

The communities in the Spring Lake watershed enjoy a picturesque waterfront setting adjacent to the five-mile long Spring Lake and just inland from Lake Michigan. Yet, this attractive location also poses challenges. Stormwater runoff carries pollutants into Spring Lake and eventually into Lake Michigan, where it impairs water quality and threatens aquatic life. Algae blooms, beach closings, no-contact (to water) advisories, and lost recreational opportunities have become more common in Spring Lake and other communities throughout Michigan.

Addressing the widely distributed causes of stormwater runoff has proven to be particularly challenging. Best management practices that rely on natural hydrology to manage stormwater can be effective in communities where they are implemented comprehensively. However, success requires the involvement of many decision makers, including public works professionals, developers and homeowners.

A COLLABORATIVE RESEARCH PROCESS

In 2007, Michigan Sea Grant funded a research team to identify ways to reduce runoff in the Spring Lake watershed in west Michigan. The project was led by Alan Steinman and Elaine Sterrett Isely from Grand Valley State University's Annis Water Resources Institute. Researchers worked closely with town managers, planning commission members, stormwater managers and residents to assess the problem and evaluate possible solutions. Ultimately, the Spring Lake watershed can serve as model for communities around the Great Lakes that struggle with stormwater runoff issues.

The *Rein in the Runoff* project is helping community leaders select the best options for reducing stormwater runoff in their areas.

“The project brought awareness to leaders that they ought to consider impacts to the watershed when planning for the future.”

Craig Bessinger
City of Ferrysburg Manager

“What was good was that they took existing ideas and made them applicable to our area. The researchers used their expertise to determine what might be the best solutions for our community. This tailored approach was really useful.”

John Nash
Spring Lake Township Supervisor

“The Final Report and the storm water management ordinance will be really useful. We have the final report on display in the lobby, the ordinance is under Planning Commission review.”

Ryan Cotton
Village of Spring Lake Manager

REIN IN THE RUNOFF

USEFUL RESULTS AND TOOLS

The research team developed a variety of useful planning tools through regular consultation with community leaders. The full report is available online and many of the resources can be applied to other towns and cities. Some of the highlights include:

A COMPARISON OF POTENTIAL STORMWATER SOLUTIONS

The project team analyzed a range of options for reducing runoff that have been successfully implemented in other communities in Michigan and throughout the country. The report compares structural Best Management Practices (BMPs), such as rain gardens and pervious pavement, and evaluates the use of non-structural BMPs like ordinances. The researchers also estimated the cost and effectiveness of the structural BMP alternatives. For example, they found that installing and maintaining vegetative swales and constructed wetlands is actually cheaper overall than using traditional stormwater management techniques.

MODEL ORDINANCES AND PERFORMANCE STANDARDS

The report includes guidance for other towns interested in making rules about animal waste and waterfowl, creating incentives for low impact development, and establishing stormwater utilities. Model ordinances are provided that can be easily modified and adopted by municipal governments around the Great Lakes.

CITIZENS GUIDE TO STORMWATER

The Citizens Guide is an abbreviated version of the full project report, targeting the residents of the Spring

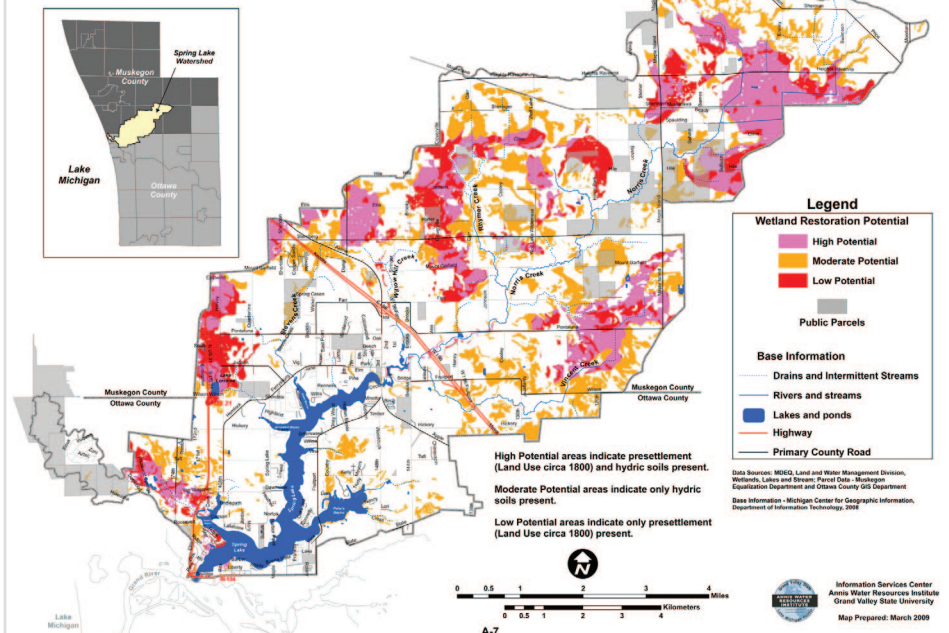
WETLANDS ASSESSMENT

Maps of the watershed illustrate where existing wetlands should be protected and where wetland restoration could occur to improve downstream water quality.

SPRING LAKE SHORELINE ASSESSMENT

Maps of Spring Lake indicate where the shoreline is still in a natural state and which areas could be improved to reduce runoff.

Potential Wetland Restoration Sites



Lake Watershed. It summarizes the project and provides information directly relevant to how individuals can manage and control stormwater runoff associated with their own activities.

GRANT RESOURCES

The report includes a description of potential funding sources for stormwater management, low-impact development, or other nonpoint source pollution control projects.

SPRING LAKE WATERSHED ATLAS

The Watershed Atlas includes all the maps created to explain and visualize

stormwater in the Spring Lake Watershed, including soil type, land use, population growth projections, and runoff estimates for different areas of the watershed. Maps also identify good locations for installing new BMPs, such as constructed wetlands or riparian buffers. With funding from the U.S. Environmental Protection Agency and the Grand Haven Community Foundation, the research team assessed shoreline areas and wetlands, which are also presented in the atlas.



Michigan Sea Grant helps foster economic growth and protect Michigan's coastal Great Lakes resources through education, research and outreach. A collaborative effort of the University of Michigan and Michigan State University, Michigan Sea Grant is part of the National Oceanic and Atmospheric Administration-National Sea Grant network of more than 30 university-based programs.

Grand Valley State University
Principal Investigator
Alan Steinman

Michigan Sea Grant
Dan O'Keefe
okeefe@msu.edu

www.miseagrant.umich.edu/research

This project was sponsored by Michigan Sea Grant College Program, R/WQ-1, under: NA05OAR4171045 from National Sea Grant, NOAA, U.S. Department of Commerce, and funds from the State of Michigan. MICHU-10-745