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Northeast Iowa Stormwater Education Program Watershed Guardian Teachers Packet



Northeast Iowa Resource Conservation and Development

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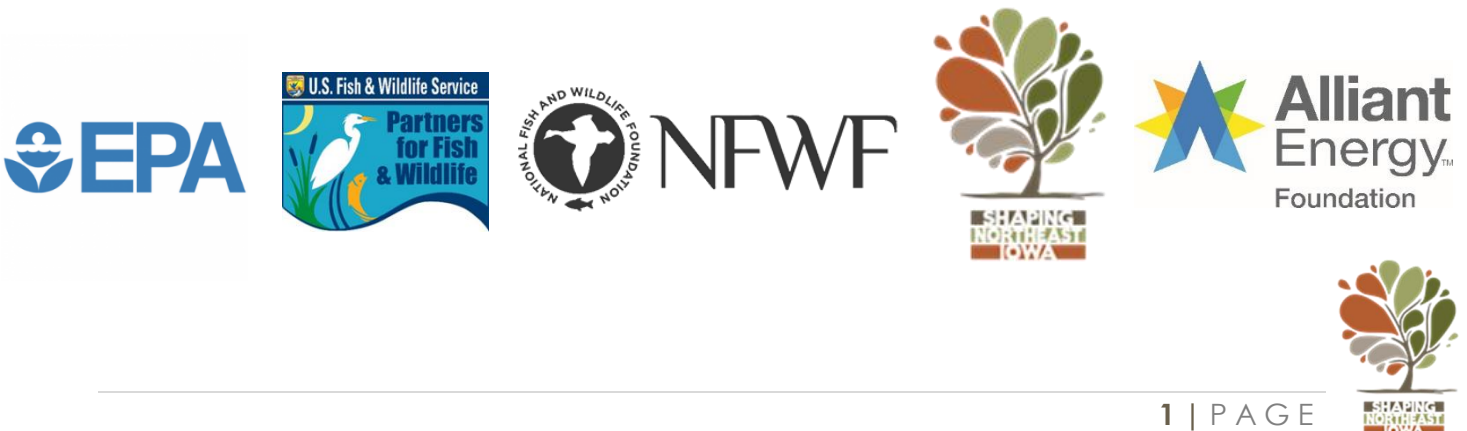
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Introduction



Fishing at Backbone State Park

Dear Teachers,

We are very excited you chose to bring your students to Northeast Iowa RC&D's Regional Urban Stormwater Demonstration Site. Thank you for allowing us to help you introduce stormwater and watershed science to your students.

The Watershed Guardian Program is intended to teach students about their watershed, the water cycle, stormwater runoff, the importance of clean water as a natural resource, the connections between communities and local streams and rivers, the impacts people have on the environment, and the actions they and others can take to reduce stormwater runoff and improve water quality at their home, school and in their community. It is also intended to empower the students and spur them to action. The program is presented in three parts, one of which you have just completed by visiting the Stormwater Demonstration Site. The next two parts, explained more in the next section below, include completing the teacher's packet and implementing a conservation practice at your school or in your community.

Lessons in the teacher's packet allow students to perform actual tests to determine the water quality of a particular water source, dive deeper into their watershed, and prepare for implementation of urban stormwater management Best Management Practices (BMPs) in their community. Lessons are coded for Iowa Core Standards making it easier for you to meet State requirements. Lessons in this packet are from the following sources: EPA, Rutgers Institute of Marine & Coastal Sciences, John Santangelo from Central Junior High in Melbourne, Florida, by Eileen Tramontana from the Suwannee River Water Management District in Live Oak Florida, the Illinois Department of Natural Resources, Chicago Wilderness, and World Wildlife Fund.

The Watershed Guardian Program will engage students to participate in a stormwater management movement, and empower them to directly impact their communities through the installation of an urban stormwater practice and to quantify their impact. It will increase their understanding of the issues and build a community of youth leadership.

We are looking forward to being a resource for you through this journey. We encourage you to work through the Watershed Guardian Program. If you have any questions, please feel free to contact the Northeast Iowa RC&D Environmental Education Coordinator, Tori Nimrod.

Thank you,

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The Watershed Guardian Program

Part 1: Field trip to Stormwater Demonstration Site in Postville, Iowa

The City of Postville, Northeast Iowa RC&D, US Environmental Protection Agency, the National Fish and Wildlife Foundation, US Fish and Wildlife Service Partners for Fish and Wildlife, Alliant Energy, and other partners have teamed up to develop a Stormwater Demonstration Site in Postville installing several urban stormwater conservation practices with bilingual interpretation, Spanish and English, of each practice. Students from around Northeast Iowa are invited to visit the demonstration site where they will engage in hands-on learning about the stormwater runoff, the impact stormwater runoff has on water quality, flooding and local streams and river, and about projects that they and others can implement to reduce the impact of stormwater runoff. The site visit will include a tour of the grounds where students will gain an understanding of how urban communities can improve their stormwater management to improve water quality and reduce the impacts of flooding. They will also get an idea of things they can do at home to improve water quality, whether it is not using fertilizer on their lawn, or implementing a rain garden. If time permits, and the teachers desires, the site visit may also include interactive activities like the ones listed below.

- EnviroScape Demonstration
 - *Students will get to explore the relationship between point and non-point pollution. They will also learn the different sources of pollution form both urban and rural areas.*
- Rain Simulation Demonstration
 - *Students will learn the relationship between water and the landscape. Students will gain an understanding of erosion and its effect on our water sources, as well as the importance of ground cover through native vegetation.*
- Rain Barrel Construction Demo
 - *Rain Barrels are very simple ways community members can limit flash flows by collecting rain water and using it around their home. Students will learn how to make a rain barrel that can be used at their home, and the importance of rain water harvest. Community Rain Barrel program is a potential project for the Watershed Guardian Program.*
- Groundwater Movement Demo
 - *The groundwater movement demonstration allows students to learn the relationship between surface and groundwater in the Karst landscape of northeast Iowa. They will learn the importance of water quality in relation to their own drinking water.*
- Kiosk Scavenger hunt
 - *Located around the Regional Urban Stormwater Demonstration Site are education Kiosks that provide extra information on topics such as, the benefits of pollinators, evapotranspiration by trees, and much more. They include Detailed information about the urban conservation practices.*



This scavenger hunt allows students to read the kiosks and get a deeper understanding of Urban conservation.

Part 2: Participation in the cross-curricular Northeast Iowa Stormwater Education Program: Watershed Guardian Teacher's Packet

After students visit the Stormwater Demonstration Site, teachers are encouraged to lead cross-curricular learning through the Northeast Iowa Watershed Guardian Teacher's Packet. Lessons included in this teacher's packet will help students understand the overall impacts of urban stormwater on flooding and water quality. Lessons included in the packet are appropriate for middle school age level students, and each lesson correlates with Iowa core standards. The packet includes a mixture of indoor and outdoor, visual and hands-on, learning activities that apply to almost every student's learning needs. Lessons included in the teacher's packet have been transformed to reflect Northeast Iowa's karst topography. A pre and post assessment measures the students learning throughout the lessons. The teacher's packet also includes project ideas and activities that will prepare teachers and students to implement their own stormwater project. *Please note: the pre-assessment is intended to be implemented before the Field Trip to the RC&D.*

Part 3: Implementation of a Best Management Practice

Teachers who 1) bring their classes to the Northeast Iowa Regional Urban Stormwater Demonstration Site in Postville, 2) implement cross-curricular learning from the teacher's packet, and 3) select and plan for implementation of an urban stormwater BMP, are eligible to apply for the Watershed Guardian Grants. These grants may provide funding for use on implementation of urban stormwater BMPs. There are two tiers of grant awards, one of up to \$500, which may be used for smaller projects, and a more competitive grant for up to \$5,000. The smaller grants are available for a limited time to teachers and classes to implement urban stormwater BMPs, programs or initiatives at their school or in their community. The larger grants will help classes implement more extensive stormwater BMPs that measurably improve stormwater runoff management at their school or in their community. More detailed information about project ideas and implementation is included in this teacher's packet. The Northeast Iowa RC&D Environmental Education Specialist is available to help with conservation practice development and installation. Student participating in small or large projects will be recognized for the efforts through press releases to local newspapers and through individual recognition as a Watershed Guardian. *Note: No matching funds are required for either grant but students are required to participate in the planning and implementation of the project.*

Special Conditions

There will be special dates throughout the year when individual youth, with or without their families, or youth groups, may visit the stormwater demonstration site without their teacher, outside of school. Although grants will only be awarded to schools for



class projects, these students will be able to become a Watershed Guardian through follow-up implementation of their own stormwater management practice in their home or community. It is also possible that a teacher/class will decide not to follow their visit with implementation of a project but an individual student from that class would like to implement a project with their family and/or friends. In any of these cases, a picture of the individual or youth group during project construction and with the finished project can be submitted by the student/s to the RC&D Environmental Education Specialist if the student/s would like to pursue becoming a Watershed Guardian.

Teachers who are unable to visit the Northeast Iowa Regional Urban Stormwater Demonstration Site in Postville because of school restrictions/regulations may work with the RC&D Environmental Education Specialist to identify other options for viewing urban stormwater practices closer to their school. If they 1) visit other approved sites, 2) complete sections of the teacher packet in their classroom, including completion of the Pre and Post-test, and 3) provide related photographs and information to the RC&D Environmental Education Specialist, they may 4) select and plan for implementation of an urban stormwater BMP, and then 5) apply for a Watershed Guardian grant to implement that stormwater management practice. Their students may also become Watershed Guardians.



Postville High School Students planting rain gardens at the Northeast Iowa Urban Stormwater Demonstration Site.