

Rhode Island Stormwater Solutions: Pursuing Youth Education at the State Level

December 2010

Project Description

With funding from the Rhode Island Department of Transportation and oversight by the Rhode Island Department of Environmental Management (RIDEM), the University of Rhode Island Cooperative Extension (URI) is developing public school education materials, outreach methods and related tools to assist Rhode Island municipalities implement effective stormwater education programs. This education and outreach project will directly support participating municipalities in complying with Phase II permit requirements.

The major project objectives are to:

- Promote public awareness of stormwater impacts and control actions through an institutionalized stormwater education campaign in public schools;
- Develop educational materials for use by teachers and student group leaders in elementary, middle and high school classrooms, clubs, and groups, in a readily accessible format; and
- Promote communication between municipal officials, school districts, and watershed organizations to provide meaningful educational opportunities as well as develop awareness of stormwater education programs and curriculum available.

Major Accomplishments

Contacts Made and Topics Discussed

Watershed Organizations

Many watershed organizations in Rhode Island are currently providing stormwater education and outreach to school children and communities as part of their programming options. These organizations included the Audubon Society, Aquidneck Island Watershed Council, Blackstone River Coalition, Blackstone River Watershed Council/Friends of the Blackstone, Blackstone Valley Tourism Council, Friends of the Moshassuck, Narragansett Bay Research Reserve, Northern Rhode Island Conservation District, Save the Bay, Wood-Pawcatuck Watershed Organization, and Woonasquatucket River Watershed Council. As organizations that have experience working with the schools and districts in Rhode Island, they have valuable input as to the feasibility of institutionalizing stormwater education in Rhode Island.

A meeting was held with the organizations listed above as well as representatives from the DEM and GEMS-NET, an education collaborative located in Southern RI, on June 3rd, 2010 at RIDEM. The purpose of this meeting was to discuss the current watershed outreach programs available to schools, how they address or might be able to further address stormwater runoff within their programs and the

obstacles and opportunities they foresee institutionalizing stormwater education in Rhode Island. This discussion aided in shaping the goals of this project.

These watershed organizations have encountered obstacles while providing outreach opportunities to schools in Rhode Island; the knowledge of which is useful when developing a state wide outreach campaign. Funding was a major concern for organizations if they were to increase programming to include visiting more schools and incorporating more stormwater focused curriculum. This included problems with large class or auditorium sizes and student access to materials and hands on program features. In addition, the state of Rhode Island's Grad Span Expectation Curriculum Standards that guide curriculum development and assessment across the state is not specific enough to ensure standardized courses. For this reason, outreach organizations must adapt their programs to mirror the focus of each school's curriculum thus requiring more time and money as well as the potential to branch away from a stormwater focus. Finally, many professional development programs designed to educate teachers on watershed science and stormwater consists of a single session that may not be enough to ensure teachers implement the curriculum thoroughly.

Watershed organizations have offered and performed many outreach events and school programs. The June 3rd meeting along with personal interviews with program education directors aided our project in establishing realistic goals that draw on the opportunities available. When developing stormwater education lessons, projects and curriculum, it is important to incorporate an array of Grade Span Expectation Standards. Educators are concerned with state standards and standardized assessment across all subject matters so it is crucial that stormwater education be introduced not only within a context of science, but to also design programs to include a mathematical, civics government and stewardship, and written and oral communication skills within lessons. Furthermore, when scheduling professional development opportunities for teachers; many schools try to incorporate the goals of the school improvement plan. Investigating the priorities of the school can aid in aligning programs to the focal points of the school and the needs of the teachers in the classrooms. Other suggestions and useful outreach strategies consisted of soliciting a teacher leader or "sustainability" contact that would aid schools in implementing stormwater education, utilizing the librarian at schools as a point of entry, incorporating data analysis and collection activities, developing high school service projects for environmental clubs and senior projects, as well as promoting municipal participation in school stormwater programs.

University Education Contacts

University Education Departments were a focus for information gathering and outreach. Many of the future educators of Rhode Island are trained in-state and students obtaining education degrees are required to perform student teaching experiences in Rhode Island schools, therefore it was identified as an ideal audience to discuss and introduce the project goals. Education professors and directors at Brown, Rhode Island College, Salve Regina, and University of Rhode Island were contacted and interviewed as well as short presentations given in some university education seminars. Although contacts were interested in the project, many found it difficult to integrate project goals into their curriculum being as environmental education is not a component of the Rhode Island teaching

standards and university student teachers are required to follow the curriculum established by the hosting districts. The presentations given at education seminar courses offered an opportunity to expose future educators to the wealth of watershed outreach organizations available in Rhode Island and to the concepts of stormwater education and its relationship to statewide standards.

Education Collaboratives in Rhode Island

Education collaboratives in Rhode Island coordinate and provide resources and professional development to over 50% of schools in Rhode Island. The East Bay Education Collaborative and the Southern RI Education Collaborative known as GemsNet (Guiding Education in Math and Science Network) provide Foss Science Kits to participating districts as well as professional development resources to assist teachers in science kit implementation within their classrooms. These interactive kits are designed to target specific science state standards at multiple grade levels. Curriculum directors for the collaboratives believe that stormwater concepts can easily be integrated into certain kits and standards for third to sixth graders, however funding to expand the curriculum is not available at this time. Over the next year, both organizations will be working to align their programs more closely with the state standards and stormwater runoff concepts will be considered throughout the process.

Environmental Education Association

Rhode Island environmental educators are collaborating with New England states to promote, support, and sponsor environmental education programs as well as develop an Environmental Literacy Plan that will help to make Rhode Island a viable candidate for the No Child Left Inside funding. The participating members of the Rhode Island Environmental Education Association (RIEEA) consist of teachers, environmental organizations, RI DEM and others that provide a broad network in which to promote project objectives. The RIEEA listserve and meetings have served as an outlet to discuss Phase II public education requirements, incorporate stormwater concepts into environmental literacy goals, and publicize stormwater education workshops and trainings.

Rhode Island Department of Education and Select Teachers

The education and teacher recertification system in Rhode Island is in the process of reform. Teachers feel a great deal of pressure to incorporate all of the state standards into their courses. According to many teachers it is difficult to find time to add any other content into their curriculum. Fortunately, stormwater runoff is a topic that has many roots in current Grade Span Expectation Standards. Development of all stormwater resources should align with current standards so that teachers can utilize it in their classrooms.

Obstacles Encountered

While working toward project objectives, particularly the goal of institutionalizing stormwater education in Rhode Island schools, the realities and obstacles of the task were encountered. Some of the major road blocks include:

- Each school district in Rhode Island interprets the state wide Grade Span Expectations GSEs differently resulting in a lack of curriculum uniformity throughout state. It is therefore difficult to create a generic third, fourth, fifth or sixth grade stormwater curriculum that is aligned to all school goals and objectives.
- Teachers and schools are very much focused on the standards assessed by state tests and have little time within their lesson and curriculum for additional content.
- Outreach organizations that provide watershed and stormwater related programs do not have consistent funding to implement programs annually within schools. Schools that receive this outreach and organizations that provide it do so by seeking funding on a yearly basis.
- The Professional Development process at Rhode Island Department of Education (RIDE) is undergoing major reform. Teachers are no longer required to accrue professional development hours for recertification while the programs shifts towards an assessment based recertification process. This may result in decreased attendance at professional development opportunities focused on stormwater education and therefore decreased implementation of stormwater curriculum available.

Project Results

Despite the obstacles encountered, steps have been taken to accomplish the project objectives. The major project results include:

- An inventory of programs and kits used in elementary and middle schools within each municipality. Identification of towns in need of stormwater education outreach and towns that currently have some kind of watershed education program incorporated into school curriculum.
- The development of indoor and outdoor lessons plans and handouts available on RI Stormwater Solutions website and at professional development workshops for elementary school teachers. Lessons are aligned to RI Grade Span Expectation Standards in science, math, writing, and civics and government, and utilize inexpensive and hands – on resources.
- Redesigning and revising the RI Stormwater Solutions Youth Education resources to include specific Grade Span Expectations, make them more teacher-friendly and promote the lending of the EnviroScape Nonpoint Source model to school teachers.
- The development of a Rain Garden Service Project Manual for high school student groups. The manual is geared towards environmental, scout and youth groups and provides instructions for designing a rain garden, acquiring resources, and publicizing the rain garden as part of a community’s pollution solution.
- A network of watershed group, teacher, and stormwater coordinator contacts established to increase awareness of Phase II regulations, stormwater education opportunities, and the overlapping goals of each participant.

- Professional development and training opportunities for teachers and interested parties on the use of the EnviroScape Nonpoint Source Model. The available workshop provides instructions and demonstrations for using the model as well as supplement materials to be used in conjunction with the model or separately.

Future Goals

- Assist municipalities in forging relationships with school curriculum directors and teachers to promote the use of RI Stormwater Solutions Youth Education Resources as well as other stormwater focused programs.
- Develop a “Know Where It Goes Certification” system so that programs containing approved stormwater concepts can be easily identified by teachers, and stormwater coordinators.
- Promote the use of lesson plans, models and curriculum in schools so as to expand stormwater education into all third, fourth or fifth grade classrooms in municipalities over the next permit term.
- Adapt and add to current youth education resources to incorporate the needs and goals of Rhode Island schools.
- Provide professional development and training of EnviroScape Model resources and alternate lessons and curriculum for schools without access to model or watershed outreach organizations.