



Reducing Fertilizer Runoff from New Jersey Farmlands



The Rutgers Cooperative Extension (RCE) Water Resources Program, in partnership with the New Jersey Natural Resources Conservation Service (NRCS), is working with New Jersey farms to reduce fertilizer runoff from farmland. The goal of the project is to retro-fit tile drains on farms throughout the state with nitrogen reducing wood chip bioreactors.

In the mid-19th century, agricultural fields with wet soils were often drained with long sections of perforated pipes called tile or tile drains. These pipes drained excess water from the fields to create conditions more suitable for growing crops. Tile drains have helped create productive farmland all over the country. Although records of tile drain installation have not been kept and the location of these systems is uncertain, the RCE Water Resources Program, through geographic information system (GIS) analyses, estimates that approximately 36,000 acres of farmland in New Jersey is likely drained by these 100+ year old underground pipe systems.

As agricultural practices have evolved over time, fertilizers containing the nutrients phosphorus and nitrogen have become a mainstay in modern cultivation. These fertilizers,

while they have increased yields, can affect water quality. Phosphorus and nitrogen are required for plant and animal growth, but too much in agricultural runoff, especially from tile drains, can result in environmental and health concerns.

In Burlington County, Specca Farms has partnered with the research team to develop and test a nitrogen reducing wood chip bioreactor. The bioreactor is designed to intercept the agricultural runoff flowing through tile drains and to filter it through a trench filled with wood chips. The perfect environment for denitrification will be created in the large trench for bacteria to reduce nitrate concentrations by 15-75%. The designs for the installation of the bioreactor will be completed over the winter, and the installation is scheduled for the early spring of 2017. We are excited to be working with the New Jersey NRCS to help farmers stay productive and also decrease their environmental impact.



Hampton Township's McKeown Elementary School Receives its own Rain Garden!

Through collaboration with the school and other partners, a rain garden was designed by the RCE Water Resources Program. Once approved by the Hampton School Board of Education, the site was excavated by the Hampton Township Department of Public Works. Students were educated about the importance of the rain garden in the classroom throughout the planning process and were given a chance to see each phase of construction and participate in the planting that took place on October 24th. This gave them a sense of ownership and appreciation of the rain garden while they look forward to help ensure the long-term use of the rain garden. One kindergartner stated, "Now all McKeown Elementary students will be the guardians of the garden!"



The rain garden at McKeown School is designed to intercept, treat, and infiltrate stormwater runoff from the building's disconnected downspouts, the asphalt driveway/parking lot, and adjacent sheds. Rain gardens reduce the volume of stormwater runoff, reduce local flooding, and reduce nonpoint source pollutants from reaching into our waterways. The RCE Water Resources Program is thrilled to be a part of Hampton Township's first green infrastructure project and hopes that this



Photo by Daniel Freed, New Jersey Herald



project will act as a springboard for the community to implement additional projects.

This project was made possible through a partnership between the RCE Water Resources Program, Sussex County Municipal Utilities Authority – Wallkill River Watershed Management Group (SCMUA-WRWMG), Hampton Township Department of Public Works, and the McKeown School and was funded in part by NJDEP 319(h) Nonpoint Source Pollution Control Grant Program and the William Penn Foundation Delaware River Watershed Initiative. For more information about the planting, check out the New Jersey Herald's article by [clicking here](#).

Sayreville Floodplain Restoration Plan

In September, Rutgers Cooperative Extension (RCE) completed a draft concept for restoring habitat areas near the South River in Sayreville. The Environmental Commission collaborated with RCE after commission members participated in the “Fixing Flooding: One Community at a Time” conference this past February. RCE and the Environmental Commission partnered to petition Sayreville to provide funds for the development of a restoration strategy for over 100 flood prone residential properties purchased through the New Jersey Blue Acres Program. Over the summer months, the RCE Water Resources Program staff and staff working with the Wildlife Extension Specialist, Brooke Maslo, conducted site visits and assessed the area to prepare recommendations for establishing new habitat zones and to create a streetscape corridor along MacArthur Avenue. The concept plan was shared with the public at Sayreville Days where members of the Environmental Commission discussed proposed ideas with residents.



The plan outlines recommendations for ecological restoration and public open space amenities for the 22 acre area. The plans maximize use of native vegetation to increase the ecosystem services provided by open space within the project area, with particular focus on increasing stormwater infiltration and flood storage. We are excited to partner with Sayreville as the community takes this proactive approach to floodplain protection and open space creation.

Upcoming Events and Conferences

A 2016 Northeast Regional Urban Extension Conference



Don't miss this chance to learn about exciting research and projects across disciplines that are helping to build more resilient, sustainable, and healthy urban communities!

The conference agenda is now available and includes over 30 topics related to the following conference themes: Strengthen Communities, Protect the Environment, Enrich the Youth, and Feed our Future. Presenters from cooperative extension agencies, universities, community organizations, and state agencies will speak on topics ranging from green infrastructure to local food systems. **Choose the workshops that are most relevant to your professional interests when you register!** Plus, take advantage of the reception and networking opportunity in the evening on Day 1 to make new contacts and explore further opportunities for collaboration.

Early Bird Discounts ends on Halloween! Register today at \$195 per person on/before October 31, 2016 and \$225 per person beginning on November 1st. Student discount, with ID, is available for \$150. Registration includes breakfast, lunch for both days, and a light reception on Tuesday evening. [Click here](#) register and learn more about this event hosted at the Rutgers University-Newark Paul Robeson Campus Center!

JERSEY WATERWORKS
CONFERENCE 2016

DECEMBER 2, 2016 | NEW JERSEY PERFORMING ARTS CENTER | NEWARK

The [Jersey Water Works Conference](#) is a day-long event that will bring together more than

300 state and local decision-makers, practitioners, and stakeholders to amplify the importance of addressing New Jersey's infrastructure, explore innovative solutions, and celebrate the Jersey Water Works collaborative as an effective, comprehensive approach to achieving statewide impact.

The conference will feature:

- National and local speakers including [keynote speaker Hon. Stephanie A. Miner](#)
- An announcement of [commitments to action](#) by the members of Jersey Water Works
- A panel discussion about the City of Newark and its water infrastructure challenges and opportunities.

RCE Water Resources Program | New Brunswick, NJ 08901 | M-F 8:30 - 4:30pm



Rutgers Cooperative Extension Water Resources Program | 14 College Farm Road, New Brunswick, NJ 07719

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