The Land and Sea Grant National Water Program Conference was held January 31 and February 1, 2011 in Washington, DC. The United States Department of Agriculture (USDA) under the National Institute of Food and Agriculture (NIFA) provides funding to the National Water Program. The National Water Program is organized into geographic regions (based on the 10 EPA regions), and projects are designed to share knowledge at the community and watershed level. The 2011 National Water Program Land and Sea Grant Conference brought colleagues from extension, education, engineering, and government together to share knowledge and case studies. For detailed information and presentations and posters from past conferences please visit http://www.usawaterquality.org/conferences/default.html.

National Land and Sea Grant Conference
Pat Rector, Environmental and Resource Management Agent, Rutgers Cooperative Extension of Morris and Somerset Counties

The Land and Sea Grant National Water Program Conference was held January 31 and February 1, 2011 in Washington, DC. The United States Department of Agriculture (USDA) under the National Institute of Food and Agriculture (NIFA) provides funding to the National Water Program. The National Water Program is organized into geographic regions (based on the 10 EPA regions), and projects are designed to share knowledge at the community and watershed level. The 2011 National Water Program Land and Sea Grant Conference brought colleagues from extension, education, engineering, and government together to share knowledge and case studies. For detailed information and presentations and posters from past conferences please visit http://www.usawaterquality.org/conferences/default.html.

Green Infrastructure
Jeremiah Bergstrom, Rutgers Cooperative Extension Water Resources Program

What is Green Infrastructure?
Green infrastructure is a cost-effective, sustainable, and environmentally friendly approach to stormwater management. Over the past twenty years, communities across the country have been exploring the use of green infrastructure practices such as rain gardens, pervious pavements, reforestation, and green roofs. These practices protect and maintain the quality of their local rivers, streams, lakes, and estuaries from the impact of development and urbanization. In terms of managing stormwater flows in an urban setting, green infrastructure refers to
The Heldrich Hotel in New Brunswick was the site of a conference on Managing Stormwater Runoff from Impervious Surfaces: Green Infrastructure Solutions for New Jersey. The Conference was hosted by Rutgers Water Resources Program and featured Michael Dietz, University of Connecticut, and Kelly Collins from the Center for Watershed Protection who presented on the first impervious total maximum daily load (TMDL) in the country. Despite yet another massive snowstorm, attendance was phenomenal and the afternoon was filled with an exciting panel discussion.

The agenda was filled with informative presentations on topics including green roofs, pervious pavements, bioretention systems, rainwater harvesting along with the Impervious TMDL by respected leaders from academia and industry. Discussion continued during lunch and after the conference allowing for further thought-provoking conversations. Presentations and handouts can be downloaded at www.water.rutgers.edu.
The Environmental Working Group (EWG) has recently published a report on the state of the nation’s drinking water utilities and the findings are disappointing, at best, with more than 300 contaminants found in the national water supply. The EWG is a 501(c)3 organization founded in 1993 by Ken Cook and Richard Wiles, and which receives approximately 35% of its funding from individuals and 60% from grants. The mission of the EWG is to “use public information to protect public health and the environment” (http://www.ewg.org/about). The United States Environmental Protection Agency (EPA) has set enforceable drinking water limits on 114 of the 316 contaminants detected, which means that nearly two-thirds of the compounds found in the national survey are unregulated. The EWG believes that the inaction by the EPA to set drinking water standards for the other 200 contaminants puts the public at unnecessary risk and is an equal contributor to the nation’s water supply issues.

EWG conducted a 3-year study (2004-2007) on the drinking water supplies for 45 states and created a ranking system for 100 utilities with service populations greater than 250,000. The rankings were based on three factors: total number of contaminants detected over the course of the study, percentage of contaminants detected of those analyzed, and the highest average concentration for any single contaminant relative to legal drinking water limits or national average concentrations. The 100 utilities were ranked with 1 being the highest quality supply and 100 being the lowest. Four New Jersey service areas were accounted for in the ranking and all were in the bottom half of those studied: Camden (85), Mahwah (63), Newark (87), and Paterson (62). A detailed examination of New Jersey’s results will be presented in the next issue of the Green Knight. The full drinking water report can be found here: http://www.ewg.org/tap-water/fullreport. The ranked water supply list can be found here: http://www.ewg.org/tap-water/rating-big-city-water.
In January 2011, New Jersey Governor Chris Christie signed into law three bills meant to address water pollution from lawn fertilizers, soil compaction due to residential development, and pollutant loads to the Barnegat Bay.

**A2501, addressing soil compaction and degradation during construction**
Enacted Assembly Bill 2501 (session 2010–2011) aims to address soil removal, compaction, and degradation that may occur during construction activities. The law requires the State Soil Conservation Committee to adopt standards for soil protection and restoration that land developers would need to follow. These standards would consider the physical, chemical, and biological properties of soils, and would aim to improve infiltration, groundwater recharge, horticultural properties of the soil, and decrease runoff from developed areas. The bill requires certification for supervisors of soil-disturbing operations and requires applications for soil-disturbing operations to have a soil conservation plan approved by the local Soil Conservation District. Standards will be developed in consultation with the New Jersey Agricultural Experiment Station, New Jersey Department of Agriculture, and the state Department of Environmental Protection. These standards would be developed by 2012.

**A3606, addressing state-owned stormwater basins in the Barnegat Bay watershed**
Enacted Assembly Bill 3606 (session 2010–2011) requires the state Department of Transportation to inventory and assess stormwater detention basins in the Barnegat Bay watershed, and to determine methods to improve or repair any that are malfunctioning. The law requires the Department of Transportation to complete this report within one year.

**A2290, addressing turf fertilization**
Enacted Assembly Bill 2290 (session 2010–2011) is considered to be the most stringent state law addressing lawn fertilizers in the nation. It sets limits for the application of both nitrogen and phosphorus fertilizers to turf areas, and requires certification for professional landscapers who apply fertilizers. It establishes standards for the content of fertilizers sold for application to turf, and regulates the labeling of those fertilizers.
Rutgers Environmental Steward Program and Troy Brook Project

Ingrid Witty, Rutgers Environmental Steward Program Rutgers Cooperative Extension

The Rutgers Environmental Steward Program (RESP), overseen by Bruce Barbour, the Agriculture and Resource Management Agent for the Rutgers Cooperative Extension of Warren County has similarities to the Rutgers Master Gardeners Program. The Program consists of 60 hours of classroom lecture that addresses various environmental issues. Examples of lectures in 2010 include: Leadership and Influence; Geology of New Jersey; Health and the Indoor Environment; Science and Precaution; Baptists, Bootleggers and Spotted Owls; and Renewable Energy. There are 20 classes; for an updated list or more information please see the website http://envirostewards.rutgers.edu/About%20Us.htm.

Certification as an Environmental Steward requires an additional internship of 60 volunteer hours on a project with a non-profit or governmental environmental agency that will achieve an associated impact.

As a Rutgers Cooperative Extension (RCE) Water Resources Program Certified Rain Garden Specialist and Trainer, Ingrid Witty chose to earn volunteer hours assisting Pat Rector, County Environmental and Resource Management Agent of Morris and Somerset Counties. Her educational project will culminate in the construction of residential rain gardens in the hills of Parsippany's Troy neighborhood through a grant from the NJ Department of Environmental Protection. The project consisted of installing five free rain gardens in a residential neighborhood. The mission was to raise the awareness of private property homeowners to the importance of rain gardens at their homes as a solution to storm water runoff.

The first part of the project consisted of educating homeowners about stormwater, the Troy Brook Stormwater Plan, and the opportunity to have a free rain garden installed on their property. A press release about the project was sent out to the newspapers, the homeowners association website and the municipal website. The next step was the canvassing of the 196 homes in the Hills of Troy neighborhood educating through one-on-one conversations as we worked through the neighborhood.

During the canvassing, which took several days, homeowners were provided with a copy of a flyer describing the project, including how rain gardens...
could help reduce stormwater runoff along with registration information. A book of rain garden pictures was specifically developed to help provide talking points as we stood on porches discussing rain gardens. Preliminary visits to all the registered homeowners were undertaken to conduct site visits while gathering information such as homeowners’ knowledge and interest in rain gardens, possible locations, and photographs of the possible sites. A Visit Response Sheet was created to document the results of the visit, and to help select a list of candidates. The five free rain garden recipients were selected by the Rutgers engineers who visited the sites, and who created a rain garden design for each of the five homeowners.

Once the percolation test and utility mark outs were complete, the rain garden construction began. The rain gardens took five days to install, and the construction process was documented through photographs. Maintenance manuals specific to each homeowner were also developed. As part of the continuing education Ingrid Witty gave a PowerPoint presentation to the Whippany River Watershed on the entire project. Members of this committee include members of the public and appointed representatives from most of the municipalities in the Whippany watershed along with County representatives.

The internship process was fun, along with providing great experience in project management from beginning to end. The impacts of this project were education of homeowners, municipal and county officials and other residents in the area, the estimated reduction of 43,280 gallons per year of stormwater, and the development of a template for a maintenance manual. A follow-up survey is being conducted with the residents in the Hills of Troy.

Central Jersey Invasive Species Task Force Goes STATEWIDE!
Pat Rector, Environmental and Resource Management Agent, Rutgers Cooperative Extension of Morris and Somerset Counties

The Central Jersey Invasive Species Strike Team (CJISST) began in 2008 utilizing the Early Detection and Rapid Response Methodology to address emerging invasive species and has now gone statewide. The New Jersey Invasive Species Strike Team is a cooperative effort, with 60 public and private partner organizations at all levels of government from federal to local and non-profit groups. If you have not checked out their website do so; there is much valuable information including an interactive map. http://www.njisst.org/Index.asp.
the use of natural processes to slow, treat or absorb runoff. Green infrastructure projects and approaches include:

- Green Roofs
- Rain Harvesting
- Downspout Disconnection
- Planter Boxes
- Rain Gardens
- Permeable Pavements
- Vegetated Swales
- Natural Retention Basins

Green infrastructure design approaches effectively divert stormwater from the storm sewer system directing it to areas where it can be infiltrated, evapotranspired or re-used. Green infrastructure is designed to keep rainwater out of the sewer system when sanitary and storm pipes are combined so that it does not contribute to a Combined Sewer Overflow. Green infrastructure also provides for treatment of stormwater through physical and biological processes prior to discharge to surface waters. These approaches are often referred to as “green infrastructure” because soil and vegetation are used instead of, or in addition to, pipes, pumps, storage tunnels, and other “hard infrastructure.”

Why should New Jersey communities be concerned?
Water, stormwater, and sewer infrastructure systems in many New Jersey communities are reaching the end of their functional life. Opportunities exist to reduce costs for maintaining and replacing this aging infrastructure using new techniques and technologies, better preparing our communities for a sustainable future. Green infrastructure planning and design approaches help communities reduce demands on existing infrastructure, extend its functional life where possible, and provide cost-effective and sustainable solutions that conserve and protect water resources while improving the quality of life of our citizens.

Where can communities get assistance?
The Rutgers Cooperative Extension (RCE) Water Resources Program is currently leading several efforts throughout the State of New Jersey by providing green infrastructure educational programs and implementing demonstration projects. The RCE Water Resources Program has been providing techni-
cal assistance to communities for several years, solving water resources problems. The Green Infrastructure Initiative builds upon these efforts and partnerships to provide targeted assistance to communities working to address infrastructure and stormwater management issues. The Green Infrastructure Initiative will provide technical assistance to communities who want to sustain their water resources and infrastructure, reduce maintenance costs, and prepare for a sustainable future with innovative techniques and technology. Examples of our ongoing efforts include:

- Green Infrastructure for the City of Camden and Gloucester City
- Environmental Justice for the City of Newark
- The Cooper River Stormwater Education & Implementation Plan in Camden County
- Sussex County Green Infrastructure Seminar Series and Demonstration Projects
- Sustainable South Bronx Training and Demonstration Projects

For more information on these efforts and how the RCE Water Resources Program can assist you and your community, please visit www.water.rutgers.edu or contact Jeremiah Bergstrom at jbergstrom(envsci.rutgers.edu).
The National Water Program’s regional programs work with the Land-Grant Universities and Sea Grant.

**What is a Land-Grant institution?**

America’s Land-grant institutions were created in 1862 by the Morrill Act to teach agricultural science, mechanical and military arts, funded originally by federal land given to the states to use or to raise funds (Wikipedia, [http://en.wikipedia.org/wiki/Morrill_Land-Grant_Colleges_Act](http://en.wikipedia.org/wiki/Morrill_Land-Grant_Colleges_Act)). In 1890 the Land-Grant Institutions were required to either show that race was not an admissions requirement or designate a separate Land-Grant institution for persons of color. In 1914 the charge to the Land-Grant institutions was increased to include the creation of Cooperative Extension to bring the knowledge of the Land-Grant institutions to farmers and homemakers. From an early emphasis on agriculture and the mechanical arts, the nation’s 100 Land-Grant institutions today have expanded their mission to include a broader range of topics retaining an emphasis of teaching, research and service activities. Rutgers, founded in 1766 is the Land-Grant institution in New Jersey. Other examples of Land-Grant institutions are Cornell, MIT, Ohio State and Penn State.

Rutgers has been, and continues to be, well represented at the National Water Conference. Madeline Flahive DiNardo, Rutgers Cooperative Extension Union County Agricultural Agent, was an invited speaker for the first session: Extension-Led Water Programs: Solving Today’s Problems, Meeting Tomorrow’s Challenges. Madeline presented on the Rain Garden Landscaper Training Program. The program is funded by a National Water Program grant titled “Stormwater Management in Your Backyard” (SWMIYB). This program involves a day of classroom training covering site selection, design, plant selection, maintenance and costs, with an optional second day of hands-on installation. The classroom training has been attended by 124 landcapers, and 60 landscapers have been certified by the program. A directory of landscapers who have completed the program is available on the Rutgers NJAES Cooperative Extension.
Madeline presented a poster about the SWMIYB program which provided training to Master Gardeners, Master Naturalists and community volunteers in Gloucester and Union Counties, NJ, Ulster County, NY and Shenandoah County, VA. Since the SWMIYB grant project began in 2008, thirteen community demonstration gardens treating and recharging over 550,000 gallons of water from impervious surfaces a year have been installed.

Michele Bakacs, Environmental and Resource and Management Agent Middlesex and Union Counties is lead author with C. Musio, P. Rector, S. Mangiafico, J. Carleo, M. Haberland, R. Mohr, C. Obropta, S. Mellor and A. Boyajian on a poster “Engaging the Public in Water Resource Issues through Rainwater Harvesting”. The poster discusses the various methods of education Rutgers Cooperative Extension has utilized in bringing rain water harvesting to NJ and the documented knowledge increase and behavior changes (e.g. amending the soil to make it more permeable). (Fig. 3)

Another Rutgers poster, “Respondents to a Lawn Care Survey in
New Jersey Cluster According to Environmental Values” by Salvatore S. Mangiafico, Christopher C. Obropta, and Elaine Rossi-Griffin, shows that motivation regarding lawn care will likely depend on addressing homeowners values, such as environmental conservation or the desire for an aesthetically perfect lawn. A survey of homeowners in New Jersey was conducted to assess their attitudes about lawn care and environmental impacts, and to determine what demographic factors related to these values. An online, 43-question survey of homeowner’s attitudes, knowledge, and practices concerning lawn care was conducted in April and May 2010 in five municipalities in New Jersey. The results suggested that strong environmental values did not translate into better horticultural practices or knowledge for respondents to this survey. Like previous surveys, this study found that homeowners valued both environmental conservation and having attractive lawns. Education programs, then, should address both of these as management goals.

A poster by Pat Rector, Resource and Management Agent Morris and Somerset Counties, Rachel Lyons, 4-H Agent Morris County, and Terri Yost Program Associate provided information on a rain barrel program that worked with teens in the Be The Change Program to educate them about stormwater and water conservation and then provide a build a rain barrel workshop. The teens then painted the rain barrels and prepared to teach at the 40th Morris County 4-H fair as a demonstration and lecture program. The painted rain barrels were displayed around the fair (Fig. 4) and provided for sale at a silent auction. All the barrels were sold covering all costs.

Amy Rowe, Environmental and Resource and Management Agent for Passaic and Essex Counties, presented a poster on teaching municipalities about the benefits of using permeable pavement for stormwater management. Some municipalities are hesitant to install permeable pavement due to the higher upfront cost compared to traditional asphalt pavement and the perceived notion that the systems are
“unproven”. This program’s learning objectives are to educate municipal officials with practical information about these systems and to dispel myths that may prevent the consideration of permeable pavement as a long-term solution for stormwater management. It is expected that municipal officials will have a new perspective on these innovative systems, which may lead to an increase in the installation of permeable pavement in municipalities of all sizes.

A poster by Pat Rector, Resource and Management Agent Morris and Somerset Counties, C. Obropta, and S. Goodrow, Rutgers Water Resource Program provided information on a Cluster Rain Garden project in the Troy Brook Watershed. The Troy Brook Watershed is a 16 square mile watershed that is ultimately a tributary to the Passaic River Basin. A phosphorus total maximum daily load (TMDL) for the non-tidal Passaic River requires a 60% nonpoint source load reduction from urban areas to achieve water quality targets at critical locations within the Passaic River Watershed. The Troy Brook is impaired for macroinvertebrates and identified issues with flooding. Rutgers University (Obropta and Goodrow, 2005) completed a Regional Stormwater Management Plan (RSWMP) for the Troy Brook Watershed. This plan identifies opportunities for the implementation of stormwater best management practices (BMPs) building upon existing partnerships to disconnect impervious surfaces.

Although many demonstration rain gardens have been installed in NJ, residential rain gardens are still not common. As a component of the implementation project, five residential, clustered rain gardens in a neighborhood area identified in the RSWMP as an area which contributes high pollutant loads were installed. This project illustrates the educational component of reaching out to a focused residential neighborhood of 196 homes through canvassing door-to-door. The follow up visits and the final installation within the neighborhood increased awareness of the Troy Brook and disconnection of impervious surfaces while reducing stormwater flow from five homes that are adjacent to or within close proximity to the Troy Brook. A volunteer from the Rutgers Environmental Stewards program assisted with this project along with Rutgers undergraduate and graduate students allowing for full coverage of the enclave. This project also illustrates the interplay between highly technical models that identified a sub-basin that would provide the greatest pollutant removal and the boots-on-the-ground approach of talking to the residents one at a time to provide great educational impact.

Fig. 6. From left: Daryl Strom, Rutgers Water Resources Engineer; Eric, Moses, and James from NJ Tree Foundation; Ben Pearson, Engineer Rutgers Water Resources Program; Joseph from NJ Tree Foundation; and Ingrid Witty, Rutgers Environmental Steward. Completion of final site November 2010. Photo credit Pat Rector.
Scope
This law applies to home lawns and public and commercial turf areas. It affects both homeowners and professional landcapers. It does not apply to golf courses, sod farms, or other farmland, with the exception that those applying fertilizer at a golf course will need to be certified.

Prohibited practices
Several poor application practices are prohibited by the law. Nitrogen or phosphorus fertilizer cannot be applied:

- during heavy rains or to saturated soils
- to impervious surfaces such as driveways and sidewalks
- to frozen ground
- before March 1 or after November 15, with the cutoff date for professional applicators extended to December 1

Limits on nitrogen fertilizer applications
Limits on the amounts of nitrogen fertilizer that can be applied vary between professional applicators and non-professionals:

- Non-professional applicators—including homeowners—may apply up to 3.2 pounds of nitrogen per 1000 square-feet per year, with no more 0.9 pounds per 1000 square-feet in any one application. The nitrogen in the fertilizer must contain at least 20% slow release nitrogen and any application cannot exceed 0.7 pounds per 1000 square-feet of water-soluble nitrogen.

- Professional applicators may apply up to 4.25 pounds of nitrogen per 1000 square-feet per year, with no more 1 pound per 1000 square-feet in any one application. The nitrogen in the fertilizer must contain at least 20% slow release nitrogen and any application cannot exceed 0.7 pounds per 1000 square-feet of water-soluble nitrogen.

Limits on phosphorus fertilizer applications
Applying phosphorus fertilizer is allowed only if it is prescribed by a soil test within the last three years. However, the law allows exceptions for the establishment of new vegetation, the repair or re-establishment of turf areas, and when liquid fertilizer is being applied directly to plant roots. As a further exception, phosphorus may be applied as an organic fertilizer providing the rate of phosphorus application does not exceed 0.25 pounds per 1000 square-feet.

Buffers
Applying nitrogen or phosphorus fertilizer is prohibited 25 feet of a waterway, with the exception that this distance is reduced to 10 feet if a more-precise application method is used (“drop spreader, rotary spreader with a deflector or targeted spray liquid”). Furthermore, a professional applicator may apply fertilizer within this buffer for a “rescue treatment.”

Certification for professional applicators
Professional applicators—including those on golf courses—will need to be certified or be supervised by a
certified applicator. The New Jersey Agricultural Experiment Station and state Department of Environmental Protection are responsible for developing the certification program.

Lawn fertilizers
Lawn fertilizers sold in the state are required to contain no phosphorus unless specifically labeled for allowed uses. Also, lawn fertilizers must contain at least 20% of their nitrogen as slow-release nitrogen, and must be formulated so that application rates do not exceed 0.7 pounds per 1000 square-feet of water-soluble nitrogen or 0.9 pounds of total nitrogen per 1000 square-feet. Labels on fertilizer bags for lawn use must indicate the percent of slow-release nitrogen as well as the total amounts of nitrogen and phosphorus.

Civil penalties
Violators of the law are subject to civil penalties, for professional applicators up $500 for the first offense and $1,000 for subsequent offenses. Others may be subject to civil penalties as well. The law may be enforced by municipalities, counties, soil conservation districts, and local health agencies. Certain actions may be taken by the state Department of Environmental Protection as well.

Time for provisions taking effect
Prohibitions against applying fertilizers in the winter, to impervious surfaces, and during heavy rains take effect immediately. Stipulations about fertilizer formulation and labeling take effect after two years. And the rest of the law takes effect after one year.

A3415, addressing water quality regulations for Barnegat Bay
Assembly Bill 3415 (session 2010–2011) would require the New Jersey Department of Environmental Protection to study water quality in the Barnegat Bay to determine if the Bay qualifies as impaired under the federal Clean Water Act, and if so develop pollutant limits and a restoration plan for the Bay. The bill would require evaluating both point sources and non-point sources of pollutants. The bill is currently under legal review, and has not been enacted.

Note
Please note that this article is intended for informational purposes only and does not address all the facets of the discussed bills. It does not represent an official or authoritative interpretation of discussed legislation.

Footnote
1 It is not clear in the text of bill if this intended to be a yearly rate or a rate for each application.

References


purchase a copy of the
RAIN GARDEN MANUAL
OF NEW JERSEY
on sale
$10

Winner of a
2011 NJ Chapter of the American Society of
Landscape Architects (NJASLA)
Merit Award!

also available to purchase online at
www.water.rutgers.edu
**UPCOMING EVENT**

**Upper Cohansey River Stakeholder Meeting and Restoration Plan Discussion**

**February 9**

7 pm

Cousteau Center in Bridgeton
(Sheppard House)
31 West Commerce Street
Bridgeton, NJ

A restoration and protection plan for the Cohansey River north of Bridgeton has been submitted to the New Jersey Department of Environmental Protection.

Sal Mangiafico from Rutgers Cooperative Extension will present an overview of the results of the study and an outline of the restoration plan.

Input from interested stakeholders is encouraged.

For more information, contact:

Salvatore Mangiafico
Rutgers Cooperative Extension of Salem and Cumberland Counties
Suite 1
51 Cheney Road
Woodstown, NJ 08098
856-769-0090
mangiafico@njaes.rutgers.edu

---

Photo: Rutgers Cooperative Extension Water Resources Program

Cooperating Agencies: Rutgers, the State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity provider and employer.
**UPCOMING EVENT**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 9, 2011</td>
<td>Upper Cohanseey River Restoration Plan and Stakeholder Meeting</td>
</tr>
<tr>
<td></td>
<td>31 W. Commerce St., Bridgeton, NJ 7PM</td>
</tr>
<tr>
<td>February 10, 2011</td>
<td><strong>NJWRRRI Poster Presentation</strong></td>
</tr>
<tr>
<td></td>
<td>Rutgers University, Cook Campus Center, New Brunswick, NJ 11AM-1PM</td>
</tr>
<tr>
<td>February 17, 2011 and</td>
<td><strong>South Jersey Rain Garden Training for Professional Landscapers</strong></td>
</tr>
<tr>
<td>March 24, 2011</td>
<td>Camden County Municipal Utilities Authority, Camden, NJ 8:45AM-4PM</td>
</tr>
<tr>
<td>February 24, 2011</td>
<td><strong>Green Alternatives and Opportunities for Business and Industry Seminar</strong></td>
</tr>
<tr>
<td></td>
<td>Sussex County Administrative Center, Newton, NJ 1-3PM</td>
</tr>
<tr>
<td>March 16, 2011</td>
<td><strong>Rain Garden and Rain Barrel Workshop</strong></td>
</tr>
<tr>
<td></td>
<td>Rutgers Cooperative Extension Monmouth County, Freehold, NJ 10AM-4PM</td>
</tr>
<tr>
<td>March 19, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
</tr>
<tr>
<td></td>
<td>35th Annual Home Gardeners School Hickman Hall Cook Campus, New Brunswick, NJ 9-11:45AM</td>
</tr>
<tr>
<td>March 24, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
</tr>
<tr>
<td></td>
<td>Ewing Township Senior &amp; Community Center, Ewing, NJ 6-8:30PM</td>
</tr>
<tr>
<td>March 26, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
</tr>
<tr>
<td></td>
<td>Cumberland County Extension (4-H) Center, Millville, NJ 2-5PM</td>
</tr>
<tr>
<td>March 29, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
</tr>
<tr>
<td></td>
<td>Sussex County Hillside Park Building, Andover, NJ 6-8:30PM</td>
</tr>
<tr>
<td>April 13, 2011</td>
<td><strong>Landscaping at the Water’s Edge Workshop</strong></td>
</tr>
<tr>
<td></td>
<td>Douglass Campus Center, New Brunswick, NJ 8:30AM-4:00PM</td>
</tr>
<tr>
<td>April 13, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
</tr>
<tr>
<td></td>
<td>Cumberland County Extension (4-H) Center, Millville, NJ 6-9PM</td>
</tr>
<tr>
<td>April 27, 2011</td>
<td><strong>Sussex County Rain Garden Training Workshop</strong></td>
</tr>
<tr>
<td></td>
<td>Hillside Park Building, Andover, NJ 8:45AM-4PM</td>
</tr>
<tr>
<td>April 30, 2011</td>
<td><strong>Ag Field Day at Rutgers Day</strong></td>
</tr>
<tr>
<td></td>
<td>Cook Campus, New Brunswick, NJ 10AM-4PM</td>
</tr>
<tr>
<td>May 14, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
</tr>
<tr>
<td></td>
<td>Mercer County/Central Jersey Regional, Abiding Presence Lutheran Church, Ewing, NJ 9-11:30AM and 12-2:30PM</td>
</tr>
</tbody>
</table>

For detailed information, please go to: [www.water.rutgers.edu](http://www.water.rutgers.edu)
UPCOMING EVENT

Rain Gardens:
A New Opportunity for Your Business

South Jersey Rain Garden Training
for Professional Landscapers

Thursday, February 17, 2011
and
Thursday, March 24, 2011

Program funded by:
USDA NIFA Regional Water Center for
Northeast States & Caribbean Islands
New Jersey Department of Environmental
Protection
New Jersey Sea Grant Consortium
Camden County Municipal Utilities Authority

To be held at:
Camden County Municipal
Utilities Authority
Camden, New Jersey
CEU’s Pending Approval

Register online at http://www.water.rutgers.edu
*************** UPCOMING EVENT ***************

WHAT IS A RAIN GARDEN?
A rain garden is a landscaped, shallow depression that captures, filters, and infiltrates stormwater runoff. The rain garden removes nonpoint source pollutants from stormwater runoff while recharging groundwater. A rain garden has two main goals. The first goal is to serve as a function system to capture, filter, and infiltrate stormwater runoff at the source, and the second goal is to be an aesthetically pleasing garden. Rain gardens are an an important tool for communities and neighborhoods to create diverse, attractive landscapes while protecting the health of the natural environment.

WHY YOU SHOULD ATTEND
This workshop will provide you with the skills needed to install and maintain a rain garden. The two-day training includes both classroom and field time, including an actual installation at a Camden County site. By the end of the second day, you will be able to add rain garden installation services to the list of products and services you offer.

AGENDA
Attendees must be present for both sessions to receive a certificate of completion.

**DAY 1: CLASSROOM SESSION**
Thursday, February 17, 2011 • 8:45am - 3:45pm
Camden County Municipal Utilities Authority

8:45 Registration
9:15 Welcome
9:30 New Jersey Stormwater Regulations: How Rain Gardens Fit the Bill
Dr. Christopher Olbrantz, PE, Extension Specialist in Water Resources and Associate Professor, Rutgers, NJAES
10:00 Rain Garden Site Selection, Installation & Maintenance
Benjamin Pearson, ET, Program Associate, RCE Water Resources Program & Mike Haberland, Environmental Resource and Management Agent, RCE of Camden and Burlington Counties
11:15 Break
11:30 Rain Garden Native Plants
Fran Chitarra, Sales Manager, Pinelands Nursery & Supply, Columbus, New Jersey
12:00 Lunch
12:45 Designing with Native Plants
Jeremiah Bergstrom, LLA, ASLA, Senior Project Manager, RCE Water Resources Program
1:30 Installing Rain Gardens on Challenging Sites
Dr. Christopher Olbrantz, PE, Extension Specialist in Water Resources and Associate Professor, Rutgers, NJAES
2:00 Who Wants a Rain Garden?
Amy Boyajian, Program Associate, RCE Water Resources Program
2:30 Break
2:35 Rain Garden Costs
Benjamin Pearson, ET, Program Associate, RCE Water Resources Program
3:00 Panel Discussion: Rain Garden Experiences
Moderator: Amy Boyajian, Program Associate, RCE Water Resources Program
3:45 Wrap up and Evaluations

NOTE: Agenda is subject to change without notice.

**DAY 2: HANDS-ON RAIN GARDEN INSTALLATION**
Thursday, March 24, 2011 • 8:30am - 12:00pm
Camden County site to be announced at the February 17, 2011 program

QUESTIONS?
Please call Amy Boyajian, Program Associate, RCE Water Resources Program, at 732-932-9800 ext 164.

REGISTRATION
Register online at http://www.water.rutgers.edu

COST: $25.00
Please make check out to “Rutgers, the State University of New Jersey.” The cost includes a copy of the Rain Garden Manual of New Jersey ($10.00 value), refreshments, and lunch for the classroom session.

Please send your check for the full amount to: Rutgers, the State University of New Jersey
RCE Water Resources Program
ATTN: Cheryl Burdick
14 College Farm Road
New Brunswick, NJ 08901

SPECIAL DISCOUNT: For businesses that would like to send more than one person to this training, there is a discounted rate of $15.00 for each additional person.

FOR EXAMPLE, XYZ Landscaping Company would like to send 3 people to the training. They will pay $25.00 for the first person and $15.00 for each additional person. XYZ Landscaping Company would end up paying a registration fee of $55.00.

DIRECTIONS
Camden County Municipal Utilities Authority
1645 Ferry Avenue, Camden, New Jersey 08110 • 856-541-3700
http://www.ccmua.org/?page_id=114

FROM THE SOUTH
Take 42 north toward Philadelphia to 676 north. Take 676 to the Morgan Blvd Exit (Exit 3). Make a left at bottom of ramp and follow to light. At light make right onto Broadway. Go to the third light, which is a five way intersection. Bear left onto Ferry Ave (the right side of Sacred Heart Church). Just past next traffic light is the CCMUA Administration Building, the newer four story building on the left.

FROM PENNSAUKEN / CHERRY HILL AREA
Take route 38 or 130 south to old Airport Circle. Continue on 130 south. At Dunkin Donuts (right side) make a right onto Haddon Ave. At traffic light make left onto Ferry Avenue. Continue on Ferry till the fifth traffic light (Broadway). You will see Sacred Heart Church in front of you. Bear to right of church to continue on Ferry Avenue. Just past the next traffic light is the CCMUA Administration Building, the newer four story building on the left.

FROM NEW JERSEY TURNPIKE
Take turnpike exit 4 to route 73 north. After about 3/4 of a mile take 295 south for about 15 miles. When 295 branches, follow signs for Philadelphia/Walt Whitman Bridge. You will be on route 42. When 4 branches left to Philadelphia by way of the Walt Whitman Bridge and right (north) to Camden by way of 676, stay right toward Camden. From 676, take exit 3 (Morgan Blvd.) Make a left turn at the base of the ramp. Follow Morgan Blvd to traffic light. At light, turn right onto Broadway. Continue to the third light, which is a five way intersection. Bear left onto Ferry Avenue (far side of Sacred Heart Church). Just past the traffic light is the CCMUA Administration Building, the newer four story building on the left.

FROM BLACK HORSE PIKE (ROUTE 168)
Take 168 north until it intersects with route 130. Keep to left at 130 to continue in a straight line (130 bears to the right). At this point the Black Horse Pike will become Mt. Ephraim Avenue. After crossing route 130, turn left onto Ferry Avenue at the fifth traffic light. (You will see a cemetery on the far side of Ferry Avenue.) Continue on Ferry till the fourth traffic light (Broadway). You will see Sacred Heart Church in front of you. Bear to right of church to continue on Ferry Avenue. Just past the next traffic light is the CCMUA Administration Building, the newer four story building on the left.

FROM PHILADELPHIA (NORTH)
From the Benjamin Franklin Bridge, take 676 south to the Morgan Blvd. Exit (Exit 3). Make a right at bottom of ramp and follow Morgan Blvd. to light. At light make right onto Broadway. Go to the third light, which is a five way intersection. Bear left onto Ferry Avenue (far side of Sacred Heart Church). Just past the next traffic light is the CCMUA Administration Building, the newer four story building on the left.
Calling All Community Gardeners

In the past five years, interest in and demand for Community Gardens has exploded. The American Community Gardening Association estimates that there are currently over 1,000,000 active community gardens. So, we thought it was high time to offer a program focusing on Community Gardens.

Whether you’re an experienced or new community gardener, a Community Garden manager, coordinator, or activist trying to get a Community Garden started, you will want to attend this program.

Thursday, March 3
9:00am to 4:30pm

$45. FRIENDS members
$60. non-members

If registered before February 4

$55. FRIENDS members
$70. non-members

If registered before February 4
UPCOMING EVENT

**DRINKING WATER IS A CRITICAL RESOURCE. HELP TO SUSTAIN IT.**

Save the date to join us for a free one-day forum to address local and regional issues affecting the current and future drinking water supply in the Delaware River Basin.

**WHAT:** First-ever Delaware River Basin Forum

**WHEN:** March 10, 2011

**WHERE:** Eight linked locations and via live webcast

**WHO:** Municipal, community and business leaders and water professionals

**VISIT:** www.DelawareBasinDrinkingWater.org

The goals of the Delaware River Basin Forum are to bring together the public, private and nonprofit entities that have a stake in clean and plentiful drinking water and can do something about it at the local level to develop a collaborative approach to protect drinking water. The agenda will include regional and local topics such as:

- Water Use and Water Supply
- Regional Impacts of Climate Change
- Strategies for Water Resource Protection
- Tools and Tactics for Local Protection


GOING GREEN

The Delaware River Basin Forum is sponsored by the Source Water Collaborative (www.protectdrinkingwater.org) and the Forum Planning Team (United States Environmental Protection Agency, Delaware Department of Health and Social Services, Delaware Department of Natural Resources and Environmental Control, Delaware River Basin Commission, New Jersey Department of Environmental Protection, New York State Department of Health and Pennsylvania Department of Environmental Protection).
CALENDAR NOTICE

SPRINGFEST FLOWER & GARDEN SHOW
March 17-20, 2011
10am – 5pm Daily
Sat till 7pm

Springfest, highly regarded as “NJ’s Best Flower Show” featuring over 100,000 ft² of “indoor-spring” including inspiring landscape displays, free lectures with paid admission, educational exhibitors, commercial vendors, kid’s zone and café. Special Sunday Symposium; Edible Gardens, featuring Roger Swain, of PBS Victory Gardens. See website for more details, www.springfestgardenshow.com

Sussex County Fairgrounds, 37 Plains Road, Augusta NJ
973-948-9448
Contact: Gale Danko, Springfest Committee
PO Box 100
Branchville, NJ 07826
973-271-2435 cell
Fax: 973-948-2083
www.springfestgardenshow.com

Coupon

Springfest
March 17-20
Flower & Garden Show

The Conservatory, Sussex County Fairgrounds, Augusta, NJ
Inspiring Ideas - Renowned Speakers - Charming Shops & Cafe
10 am-5pm, Saturday till 7 pm / Senior Day - Thursday

www.springfestgardenshow.com
$1 off regular $11 Adult Admission with this ad!
973-948-9445

*************** UPCOMING EVENT ******************
******************* UPCOMING EVENT *******************

Rain Barrel Workshops

Saturday, March 26, 2011
2:00–5:00 pm
&
Wednesday, April 13, 2011
6:00–9:00 pm

What: Join CCIA and partners for one of these hands-on workshops designed to educate participants on the benefits of rainwater harvesting. Workshop participants will build a rain barrel to take home.

Where: Workshops will be held at Rutgers Cooperative Extension of Cumberland County, Education Center
291 Morton Avenue,
Millville, NJ 08332

Register: To register call Viola at Rutgers Cooperative Extension,
phone: (856) 451-2800 ext. 4

Fee: A $35 registration fee includes instructions and materials for building one rain barrel. Checks should be made payable to Extension Services Program Account.

Sponsors:
Cumberland County Improvement Authority
Rutgers Cooperative Extension Water Resources Program
Rutgers Cousteau Center at Brigantine
Rutgers Cooperative Extension Master Gardeners Program
AmeriCorps NJ Watershed Ambassador

Rain barrels are a great way to capture and recycle rain water for gardening.
Save the Date

Volunteers Needed for Plantings at Scotland Run Park

Saturday, March 26, 2011
9am to Noon

Volunteers are needed to plant native plants around Wilson Lake at Scotland Run Park in Clayton, NJ. These plants will help to establish a buffer between the lake and the recreation area helping to reduce the presence of geese.

For more information, contact Christine Nolan at SJLWT: (856) 881-2269 cnolan@sjlandwater.org

Sponsored by:
Gloucester County Dept. of Parks and Recreation
South Jersey Land & Water Trust
Scotland Run Nature Center
AmeriCorps NJ Watershed Ambassadors Program
*************** UPCOMING EVENT ***************

Free Water Quality Workshops

Ever wonder about the water quality of our streams? Take a FREE stream monitoring workshop hosted by the AmeriCorps NJ Watershed Ambassadors Program. You will learn about watershed and water quality issues affecting your community and trained to visually assess the quality of streams.

<table>
<thead>
<tr>
<th>Place</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parvin State Park</td>
<td>April 9 2011</td>
<td>10am</td>
</tr>
<tr>
<td>Scotland Run Nature Center</td>
<td>April 30 2011</td>
<td>10am</td>
</tr>
<tr>
<td>Pinelands Preservation Alliance</td>
<td>May 21 2011</td>
<td>10am</td>
</tr>
<tr>
<td>Cousteau Center, Bridgeton</td>
<td>June 4 2011</td>
<td>10am</td>
</tr>
<tr>
<td>Triple Oaks Nursery</td>
<td>June 28 2011</td>
<td>1pm</td>
</tr>
</tbody>
</table>

To register for these FREE workshops, RSVP to the contact below:

Philip Arsenault
856-825-3700 x4023
watershed17@ccia-net.com

---

Green Knight newsletter

Editors:
Pat Rector
Sal Mangiafico
(Rutgers Cooperative Extension Environmental and Resource Management Agents)
P.O. Box 900, Morristown, NJ 07963-0900
973-285-8300 ext. 225
http://salem.rutgers.edu/greenknight/
rector@njaes.rutgers.edu

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity provider and employer.

Rutgers Cooperative Extension educational programs are offered to all without regard to race, religion, color, national origin, ancestry, age, sex, sexual orientation, gender identity and expression, disability, atypical hereditary cellular or blood trait, marital status, civil union status, domestic partnership status, military service, veteran status, and any other category protected by law.