Hydraulic fracturing—also called hydrofracking or fracking—is a process where large volumes of water with sand and chemicals are injected into a geologic formation in order to cause fractures in the formation. This allows the release of oil or gas trapped within the formation to a well bore.


New Jersey Weighs In on Hydrofracking
Salvatore Mangiafico, Environmental and Resource Management Agent, Salem and Cumberland Counties

Hydrrilla — an emerging invasive aquatic plant — comes to NJ
Pat Rector, Environmental and Resource Management Agent, Rutgers Cooperative Extension of Morris and Somerset Counties

No, it is not a new rock band nor a 1950’s Japanese monster. It is an aquatic invasive species that has been reported in at least one county in South Jersey. Hydrrilla (*Hydrrilla verticillata*) is an aquatic invasive species listed on the USDA’s federal noxious weeds list [http://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/downloads/](http://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/downloads/).
Hydrilla continued from page 1.

weedlist2006.pdf). It is a submersed plant but it will reach to the surface and it can form very dense mats that make recreating on a lake or waterbody difficult. It is able to grow in most freshwater water-bodies and can grow in shallow or fairly deep waters (up to 20 feet). Since it can also withstand shading, it can outcompete most other aquatic vegetation as it takes over a lake.

Hydrilla, an aquatic invasive species that is newly invading NJ. Photo: California Department of Food and Agriculture.

The Long Branch Patch reports that the West Long Branch, NJ council has awarded a total of $29,530 to address management of hydrilla and other aquatic invasive species in Franklin Lake, West Long Branch (http://longbranch.patch.com/articles/council-adopts-lake-management-plan).

The University of Florida is working to address aquatic invasive species, with an emphasis on hydrilla and hygrophyilla. The focus of a grant funding their research is to develop other management techniques to address hydrilla. In Florida $12–17 million is spent on aquatic plant management, with the majority of that funding going to treat lakes in Osceola County with herbicide applications to address hydrilla (http://plants.ifas.ufl.edu/osceola/epa_wkpln_contents.html). In Florida hydrilla is becoming resistant to traditional herbicide applications.

If you find hydrilla in a lake or pond you should contact your lake manager and your local County Extension Office.

Dense mats of hydrilla can make boating and swimming impossible. This is not good habitat for other aquatic vegetation, birds or fish. Photo: California Department of Agriculture.
The process has gained much attention recently in the Northeast U.S. since development of gas extraction from the Marcellus Shale has become increasingly viable. Proponents of this development note that the natural gas represents a domestic source of fuel, that natural gas is generally a cleaner fuel than oil or coal, and that the gas held in the Marcellus formation could supply U.S. needs for decades. Gas development is attractive also because it increases local employment and helps to suppress rising fuel costs.

Critics of hydrofracking allege that the process can contaminate water supplies. Several lawsuits by residents in areas where hydrofracking has occurred claim that the process contaminated groundwater supplies with methane and other pollutants. Concerns that large quantities of liquid waste products could be discharged to surface waters have also been raised. Part of this concern is that even if wastewater facilities exist, the volumes of wastewater generated may exceed the capacity of treatment plants to process them, and that conventional wastewater treatment processes may not be effective with the types of chemicals found in the waste.

Defenders of the process contend that any disruption to groundwater flow or quality is rare and usually temporary (PennDEP, 2010), and that contamination of groundwater by gas can occur in the absence of drilling.

**New Jersey calls for caution in approving gas production wells in the Delaware River Basin**

In April, New Jersey Department of Environmental Protection Commissioner Bob Martin sent formal comments to the Delaware River Basin Commission urging “great caution” in approval of gas wells in the Delaware River Basin that use the hydraulic fractur-
 Hydrofracking continued from page 3.

Since the Marcellus Shale formation doesn’t extend into New Jersey, the state is unlikely to see extension production of shale gas. However, areas of both New York and Pennsylvania containing the Shale fall within the Delaware River Basin. Commissioner Martin’s comments noted that up to a quarter of New Jersey’s drinking water comes from the Delaware River, and sought to ensure shale gas development would pose no threat to New Jersey drinking water supplies (NJDEP, 2011). The comments also raised concern about the volume of water used in the extraction process and the method of disposal of waste products.

Specifically, the comments asked that the Delaware River Basin Commission have stage approval of new wells and well pads and asked that within two years of the adoption of regulations, only 30 pads with no more than 300 wells be approved. This would give time for assessment of the impacts of the wells and assessment of the effectiveness of regulations.

The Delaware River Basin Commission is a government agency that has authority to oversee water quality and quantity in the Delaware River Basin. It is composed of representatives from each of the four member states: NJ, PA, NY, and DE, and a representative from the U.S. Army Corps of Engineers.

The FRAC Act
On the federal level, U.S. Senator Robert Casey (D-PA) has introduced legislation to repeal the exemption for hydrofracking from the Safe Drinking Water Act and give the U.S. Environmental Protection Agency oversight over the process (Silver, 2011). The legislation, Senate Bill S.587 (2011), is titled “Fracturing Responsibility and Awareness of Chemicals Act,” or FRAC Act. Supporters of the bill note it will require disclosure of the chemicals used in the hydrofracking process and give oversight for a process with the potential to harm water supplies. Opponents fear natural gas production will be stifled by giving the U.S. EPA oversight over an industry it has not traditionally regulated to a great extent.

References and further reading


NBC News, Philadelphia learns of Rain Gardens
Mike Haberland, Environmental and Resource Management Agent, Burlington and Camden Counties

Mike Haberland, Rutgers Cooperative Extension Environmental and Resource Management Agent, talked to NBC Philadelphia News about rain gardens. The video can be seen at this link: http://www.nbcthadelphia.com/news/green/A_Rain_Garden__Good_for_the_Environment__Philadelphia-120245839.html.

A Clean Water Act 319(h) grant was provided by NJDEP to Rutgers Water Resources Program, a cooperative partnership project between Camden Soil District, Rutgers Water Resources Program, Rutgers Cooperative Extension Environmental and Resource Management Agent Mike Haberland and Camden Soil District for a cooperative partnership project in the Cooper River Watershed. The project included the installation of forty rain gardens in the Cooper River Watershed and a 10-week environmental education component to be provided at a school in Camden, Haddonfield and Lindenwold culminating in the building of rain gardens.

Rain garden at Chester Library, Morris County. (Photo: Amy Boyajian, Rutgers Cooperative Extension Water Resources Program.)
Green Infrastructure for the City of Newark

Amy Rowe, Environmental and Resource Management Agent for Passaic and Essex Counties

Newark is the most populated city in New Jersey with more than a quarter of a million residents living in an area of less than twenty-five square miles. This population density is more than an order of magnitude higher than the New Jersey average, and more than 28% of Newark residents live below the poverty line. More than 40% of the city is served by a combined sewer system that discharges contaminated stormwater and untreated sewage into the Passaic River during overflow events. One way to lessen the burden on that system is to capture, treat, and infiltrate as much stormwater runoff as possible.

Through a partnership among Rutgers Cooperative Extension’s Water Resources Program, the Greater Newark Conservancy, and the New Jersey Department of Environmental Protection, twenty vacant lots throughout Newark, NJ, have been targeted for the installation of pilot stormwater management demonstration projects. The lots have been leased long-term by the city to the Greater Newark Conservancy for an extremely reasonable fee. There is at least one lot in each of the city’s five wards. Three of the sites have commenced their transformation into community green spaces, with the “greening” process providing educational opportunities for schools, job training opportunities for adults, and opportunities for nearby residents to adopt garden plots. The sites will include rainwater harvesting systems, rain gardens, and permeable pavement. These practices can all contribute to reduced stormwater runoff inputs to the city’s combined sewer system and to reduce combined sewer overflow incidence.

Green Infrastructure Newark continued on page 7 →
Public awareness of the importance of managing stormwater runoff has begun through several avenues. Neighborhood meetings have occurred to make the residents aware of the upcoming plans for the vacant lots, to discuss residents’ questions and concerns, and to give the residents a tentative timeline for lot activities. The citizens were eager to claim gardening plots and were happy to hear that there will be a water source onsite.

Adults have received green job training with in-class lectures on stormwater management, rain garden installation, and rain garden maintenance. Those lectures were augmented with the attendees assisting with the construction of several rain gardens over the course of a week. After the completion of the training, the participants received a certificate of completion and are certified by Rutgers Cooperative Extension. It is expected that this training will enhance the participants’ ability to find a local “green” or landscaping job now that they have knowledge of stormwater management and rain garden installation. A science-based curriculum called “Stormwater Management in Your School Yard” is currently being presented to one of the schools adjacent to one of the greened lots (Sussex Avenue School). At the end of the 9-module program, the students will participate in planting the rain gardens with native New Jersey plants. The participation of two other local schools is currently pending. The lots will be retrofitted with rainwater harvesting systems and with this source of water, local residents will have the opportunity to adopt garden plots and enjoy the green spaces that have been created.

In March, the US Environmental Protection Agency released an updated mapping tool as part of its Enforcement and Compliance History Online (ECHO) toolset. The web-based, interactive map is intended to be easily accessible for the public. The site lists facilities with water discharge permits and information on inspections and enforcement activities. Summary data for New Jersey is provided with a state-specific dashboard, which is accessible by simply clicking on New Jersey from the national map.

More information can be found in the US EPA press release (http://yosemite.epa.gov/opa/admpress.nsf/0/8766584EBB314FEA8525785D004DE550) or by visiting the mapping tool website (http://www.epa-echo.gov/echo/ancr/us/).

The tool identifies holders of discharge permits under the National Pollutant Discharge Elimination System (NPDES), which regulated the discharge of pollutants into Waters of the United States. General information about NPDES can be found at http://cfpub.epa.gov/npdes/index.cfm.

New Jersey Department of Environmental Protection seeks to enact “Waiver Rule”
Pat Rector, Environmental and Resource Management Agent for Morris and Somerset Counties

The New Jersey Department of Environmental Protection (NJDEP) is proposing a new rule (http://www.state.nj.us/dep/newsrel/2011/11_0031.htm) known as the Waiver Rule. By the Rule definition “Waiver” means “a decision by the Department that relaxes strict compliance with a specific Department rule, in whole or part, as applied to a specific person, at a specific time or place, on the basis of the particular circumstances of that person.”

The Waiver Rule is intended to provide for “limited circumstances in which the Department may, in its discretion, waive the strict compliance of a rule consistent with the core missions of the Department to maintain, protect, and enhance New Jersey’s natural resources and to protect the public health, safety, and the environment.”

The rule would provide the ability to extend a waiver if:

1. A rule conflicts with another Department rule;
2. The rule would be unduly burdensome; “Unduly burdensome” means actual, extraordinary hardship that a person subject to a particular rule would incur as a result of the strict compliance of the rule for a particular project or property;
3. There would be a net environmental benefit from a proposed Development, permit, activity, or inactivity; or
4. A public emergency.

There are certain regulatory requirements that may not be waived, including those required by state or federal law, multi-state agreements or standards relating to human health.

When waivers are granted they will be provided in writing and specify the conditions of the waiver. Failure to adhere these conditions could lead to revocation of the waiver. It is not clear, however, how this revocation would work if a project were already completed. A list of granted waivers will be posted on the NJDEP website.

There appears to be differing sentiments among some members of the Business Community and the Environmental Community on this proposed rule. A collection of business associations have jointly signed a letter of support to Commissioner Martin for the common sense approach to government that they feel the Waiver Rule will help to achieve. Signatories were The New Jersey Business & Industry Association,

Waiver Rule continued on page 9→

In contrast, a letter to Governor Christie, asking to “open a dialogue,” was signed by 17 well known environmental groups. Concern about the Waiver Rule (Executive Order #2) was one of two topics discussed within the letter dated March 1, 2010 (http://www.anjec.org/pdfs/Pos-ChristieLetterOpposeEOS030110.pdf). Signatories included the NJ Audubon Society; Stony Brook-Millstone Watershed Association; NJ Conservation Foundation; Environment New Jersey; Delaware Riverkeeper Network; New Jersey Sierra Club; Upper Raritan Watershed Association; Association of New Jersey Environmental Commissions; New Jersey Conservation Foundation and Pequannock River Coalition, along with others. In addition, the NJ chapter of the Sierra Club indicated that it is not in favor of the Waiver rule citing reasons such as the vagueness of the rule which allows for waivers to be granted for unspecified causes (http://newjersey.sierraclub.org/PressReleases/0218.asp).

To view the Draft Rule, visit http://www.nj.gov/dep/rules/proposals/030711b.pdf. A Public Hearing was held on April 14, 2011 at the NJ DEP Trenton offices, and public written comments will be accepted until May 2011. Written comments may be submitted by May 6, 2011 to:

NJ Department of Environmental Protection
Gary J. Brower, Esq.
ATTN: DEP Docket No. 03-11-02
New Jersey Department of Environmental Protection
Office of Legal Affairs, 4th Floor
PO Box 402
Trenton, NJ 08625-0402
Conservation Effects Assessment Project (CEAP) in the Chesapeake Bay Watershed

In March, the United States Department of Agriculture released findings from its Conservation Effects Assessment Project (CEAP) for the Chesapeake Bay watershed.

The report, titled Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Chesapeake Bay Region, found that voluntary structural practices or management practices—such as buffers, terraces, or reduced tillage—reduced losses of sediment, nitrogen, and phosphorus from crop fields. The study was based on statistical models which compare actual conservation practices implemented on farms in the Chesapeake Bay watershed to scenarios in which those practices had not been implemented. Results included edge of field losses for:

- sediment reduced by 55 percent
- nitrogen with surface runoff reduced by 42 percent
- nitrogen in subsurface reduced by 31 percent
- phosphorus (sediment-attached and soluble) reduced by 41 percent.

Stream Monitoring Workshop

Do you live near a stream or river and want to learn how you can monitor the health of the body of water?

Do you want to learn more about water quality, streams, and the insects that live in them?

If so, NJ Watershed Ambassador, Allison Petryk is holding a Stream Monitoring Workshop, where you can learn about visual and biological stream monitoring techniques in the Pequannock River at Appelt Park.

Workshop includes indoor presentation and hands on stream portion

May 7th
10:00 am- 3:00 pm
Where: Meet at Bloomingdale Senior Center
Cost: FREE

***To register for this free workshop, please contact Allison Petryk ambassador@passaiccountynj.org or 973-569-4055
Space is limited! Register Now! ***
UPCOMING EVENT

Rain Barrel Workshop presented by the Whippany River Watershed Action Committee

Date: May 7, 2011
Time: 9:00 a.m. to 12 Noon
Veterans Memorial Park
Route 46 East, Parsippany
Rain Barrel workshop will be presented at Veterans Memorial Park by representatives of Rutgers Cooperative Extension.
Cost is $60.00 per barrel
Please note that registration must be received no later than May 2, 2011

Please contact Mary O’Keefe at:
info@wrwac.org
maokeefe44@optonline.net
phone 973-428-6279
UPCOMING EVENT

Healthy Lawns

and

Soil Quality classes

Healthy Lawns

Learn and discuss New Jersey’s new turfgrass fertilizer law and low-impact lawn management

Woodstown
May 9, 2011
6:30–7:30 PM
Cooperative Extension of Salem County
Ware Building
51 Cheney Rd.
Woodstown, NJ 08098
Free

Rosenhayn
May 16, 2011
6:30–7:30 PM
Cooperative Extension of Cumberland County
4-H Extension Education Center
291 Morton Ave.
Millville, NJ 08332
Free

Soil Quality, Compaction, and Development

Learn and discuss basic soil properties and soil quality issues related to compaction and development

Woodstown
May 24, 2011
6:30–7:30 PM
Cooperative Extension of Salem County
Ware Building
51 Cheney Rd.
Woodstown, NJ 08098
Free

Rosenhayn
May 26, 2011
6:30–7:30 PM
Cooperative Extension of Cumberland County
4-H Extension Education Center
291 Morton Ave.
Millville, NJ 08332
Free

For more information, contact Sal Mangiafico, Rutgers Cooperative Extension Resource Management Agent.
mangiafico@njaes.rutgers.edu. 856-769-0090.
**UPCOMING EVENT**

**Let’s Build a Rain Barrel!**

Museum Garden Club of Jefferson
and
Pat Rector
Rutgers Cooperative Extension Morris County Environmental and Resource Management Agent

**Build a Rain Barrel Workshop**
**Date:** Thursday, May 12, 2011  
**Time:** 7:30 – 9:30 pm  
**$60 per barrel**  
**Location:** Camp Jefferson  
Weldon Road, Jefferson Twp. NJ

TO REGISTER AND RESERVE A BARREL Make Checks payable to Rutgers, The State University and mail to:  
Jefferson Township Museum  
315 Dover-Milton Road  
Jefferson Twsp., NJ 07438 (Include name, phone and e-mail)  
Contact info: Gardener1@jthistoricalsociety.org or Megan  
973-208-8722
****** UPCOMING EVENT ******

Green Solutions for Urban New Jersey
2011 Conference | Center of Urban Environmental Sustainability (CUES)

Save the date
May 18-19, 2011
Location May 18: Jersey City
Location May 19: Newark

Invited keynote speaker: Senator Robert Menendez

Professional education credits for landscape architects, engineers, planners — (CEUs) 3 contact hours

How can municipalities and counties increase best management ‘green’ practices in the New Jersey’s oldest cities?
Learn about proven modern approaches which provide urban environmental services that can:

- Use urban ‘greening’ to save energy
- Lessen urban heat island effects
- Improve processes to increase recreational and open space
- Mitigate urban storm water quality and quantity problems
- Protect water resources

For further information go to: http://cues.rutgers.edu/green-solutions/
The NJ Sierra Club Water Sentinels & NJ Watershed Ambassadors Program

Join us for a

**Canoe/Kayak Cleanup**

of the D&R Canal

----------

Millions of tons of trash enter our nation’s streams and rivers every year. Join us in an effort to protect the Delaware River Watershed, as we tow a “canoe barge” to collect trash along the Whitehead RD area of the D&R Canal. Learn about the importance of keeping NJ waterways clean as Meghan Keffer, NJ Watershed Ambassador, does an interactive stream assessment demonstration to identify stream critters and their role as water quality indicators!

**Date:** Saturday, May 21, 2010  
**Time:** 10am  
**Location:** Cherry Tree Lane (D&R Canal Put-In), Lawrenceville, NJ,  
**GPS Coordinates:** N 40 14.866 W 74 43.796  
**Bring water and snacks. Trash bags will be provided.**

Join us and receive a NJ Sierra Club Water Sentinels Program t-shirt.  
Thank you for your helping to enhance our community and protect NJ’s waterways.

For more information and to register please contact:  
George and Leona at Leona@pineypaddlers.com or 609-259-3734
### Upcoming RCE Water Resources Program’s Events

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>February 9, 2011</td>
<td><strong>Upper Cohasny River Restoration Plan and Stakeholder Meeting</strong></td>
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<td></td>
<td>31 W. Commerce St., Bridgeton, NJ 7PM</td>
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<tr>
<td>February 10, 2011</td>
<td><strong>NJWRI Poster Presentation</strong></td>
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<td></td>
<td>Rutgers University, Cook Campus Center, New Brunswick, NJ 11AM-1PM</td>
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<tr>
<td>February 17, 2011 and March 24, 2011</td>
<td><strong>South Jersey Rain Garden Training for Professional Landscapers</strong></td>
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<td></td>
<td>Camden County Municipal Utilities Authority, Camden, NJ 8:45AM-4PM</td>
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<tr>
<td>February 24, 2011</td>
<td><strong>Green Alternatives and Opportunities for Business and Industry Seminar</strong></td>
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<td></td>
<td>Sussex County Administrative Center, Newton, NJ 1-3PM</td>
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<td>March 16, 2011</td>
<td><strong>Rain Garden and Rain Barrel Workshop</strong></td>
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<td></td>
<td>Rutgers Cooperative Extension Monmouth County, Freehold, NJ 10AM-4PM</td>
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<td>March 19, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
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<td>35th Annual Home Gardeners School Hickman Hall Cook Campus, New Brunswick, NJ 9-11:45AM</td>
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<tr>
<td>March 24, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
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<td>Ewing Township Senior &amp; Community Center, Ewing, NJ 6-9:30PM</td>
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<td>March 26, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
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<td>Cumberland County Extension (4-H) Center, Millville, NJ 2-5PM</td>
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<tr>
<td>March 29, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
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<td>Sussex County Hillside Park Building, Andover, NJ 6-8:30PM</td>
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<tr>
<td>April 13, 2011</td>
<td><strong>Landscaping at the Water’s Edge Workshop</strong></td>
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<td></td>
<td>Douglass Campus Center, New Brunswick, NJ 8:30AM-4:00PM</td>
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<tr>
<td>April 13, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
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<td></td>
<td>Cumberland County Extension (4-H) Center, Millville, NJ 6-9PM</td>
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<tr>
<td>April 27, 2011</td>
<td><strong>Sussex County Rain Garden Training Workshop</strong></td>
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<td></td>
<td>Hillside Park Building, Andover, NJ 8:45AM-4PM</td>
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<tr>
<td>April 30, 2011</td>
<td><strong>Ag Field Day at Rutgers Day</strong></td>
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<td></td>
<td>Cook Campus, New Brunswick, NJ 10AM-4PM</td>
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<tr>
<td>May 14, 2011</td>
<td><strong>Rain Barrel Workshop</strong></td>
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<td></td>
<td>Mercer County/Central Jersey Regional, Abiding Presence Lutheran Church, Ewing, NJ 9-11:30AM and 12:2:30PM</td>
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For detailed information, please go to: [www.water.rutgers.edu](http://www.water.rutgers.edu)
************** 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>
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<tbody>
<tr>
<td>Parvin State Park</td>
<td>April 9 2011</td>
<td>10am</td>
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<tr>
<td>Scotland Run Nature Center</td>
<td>April 30 2011</td>
<td>10am</td>
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<tr>
<td>Pinelands Preservation Alliance</td>
<td>May 21 2011</td>
<td>10am</td>
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<tr>
<td>Cousteau Center, Bridgeton</td>
<td>June 4 2011</td>
<td>10am</td>
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<tr>
<td>Triple Oaks Nursery</td>
<td>June 26 2011</td>
<td>1pm</td>
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</tbody>
</table>

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

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

New Jersey Invasive Species Strike Team

UPCOMING TRAININGS

April 30 - South Mountain (W. Orange)
May 14 - Duke Farms (Hillsborough)
May 20 - Duke Farms (Hillsborough)

RSVP required! Please see http://www.njisst.org/events.asp for details.