

Green Infrastructure Education, Implementation, and Outreach in New Jersey Municipalities

Jessica Brown, PE

Christopher C. Obropta, PhD, PE

Rosana Da Silva

International Low Impact Development Conference 2015

Education, Training and Outreach Technical Session 1-6

Houston, Texas

January 19, 2015





...is to identify and address community water resources issues using sustainable and practical science-based solutions.





Source: giantbomb.com

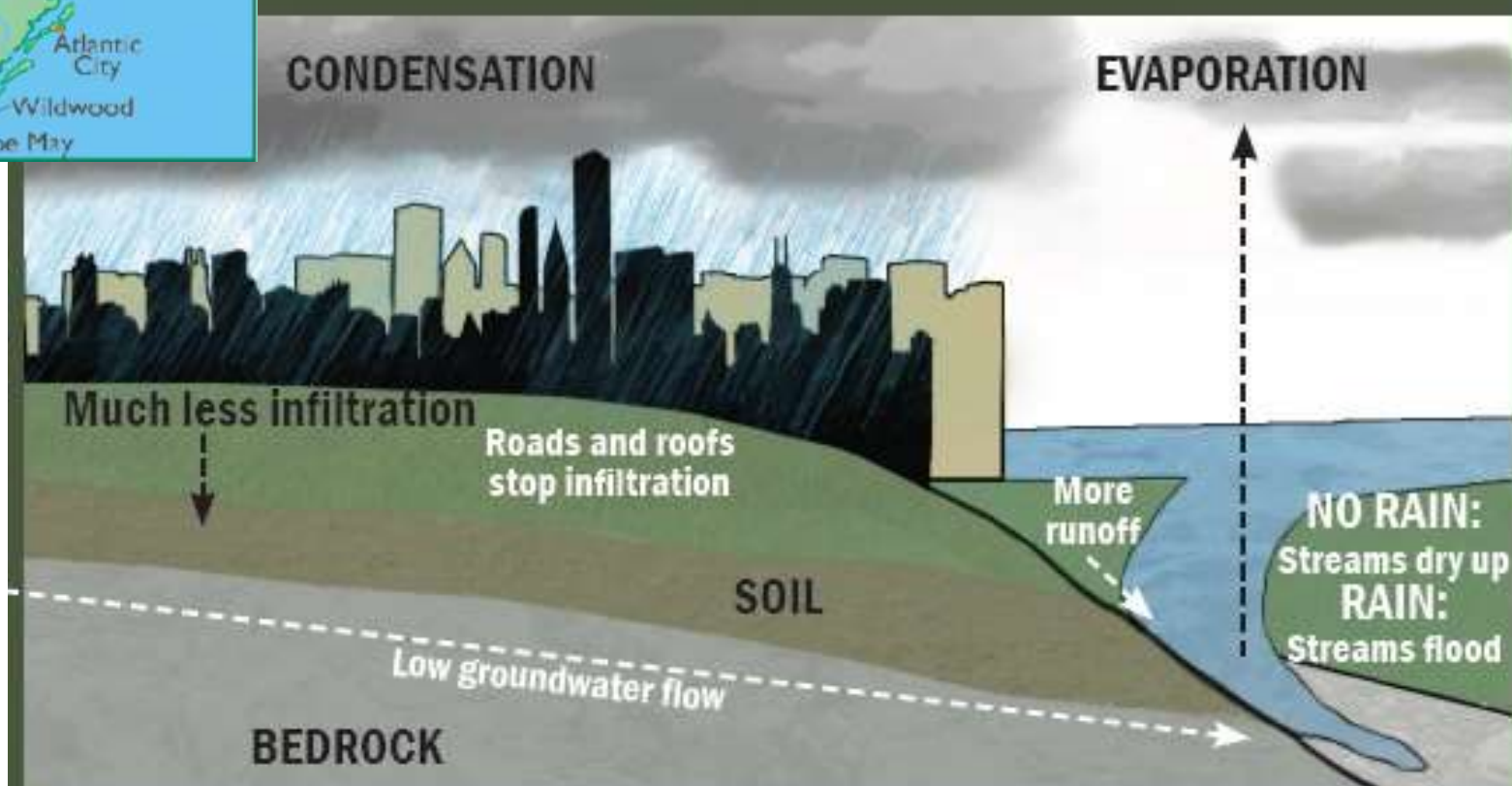




Photo Credit: John O'Boyle/The Star-Ledger)



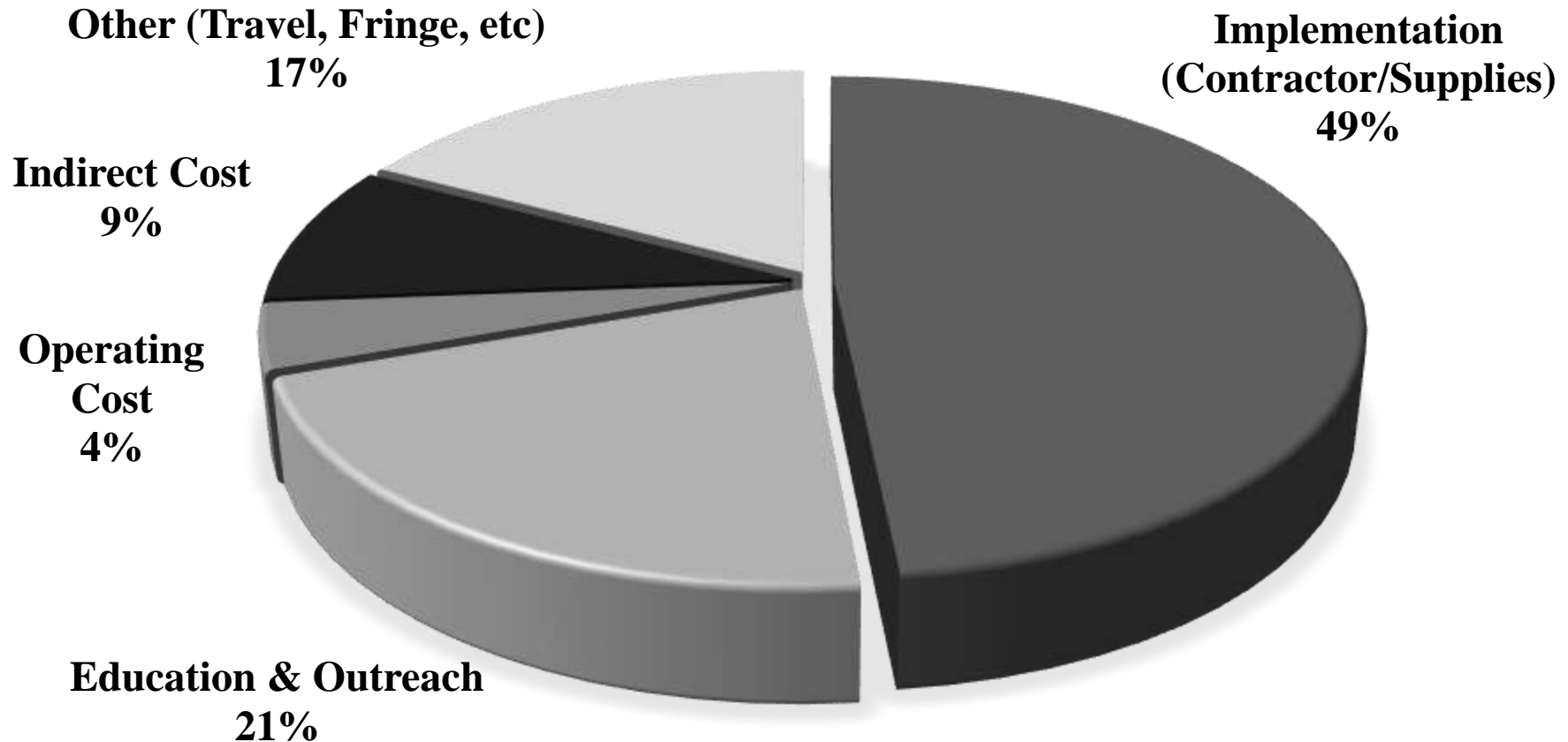
Photo credit: Denise Casagrande



Photo credit: U.S. Air Force photo by Master Sgt. Mark C. Olsen



- Funded in 2013; two grants from NJDEP, part of Clean Water NJ Fund
- ~\$185,000 total



Community Groups



**Anyone
who will
listen**

Municipal Officials



Youth



Outreach

Education

Implementation

Schools



**Municipal
Property**



- ***Three (3) state-wide educational programs***
 - *“Asking the Right Questions in Stormwater Review”*
Stormwater Management and Regulation: Municipal Official Training (2014)
 - Enhancing resiliency in NJ Municipalities and Communities: Asset management and Mitigation Planning (2015)
 - Stormwater permit regulation compliance for stormwater coordinators (2015)



“Asking the Right Questions in Stormwater Review”

4 workshops; defining the role of the
municipal official

- 21% increase in average rating for knowledge of stormwater management
- 25% increase in average rating of understanding the municipality’s role in reviewing stormwater management applications



“Asking the Right Questions in Stormwater Review”

All (100%) responses demonstrated an understanding that regardless if a developer receives a permit from NJDEP the municipality is responsible for approving the stormwater management plan.








Ensuring the approval of an applicant/developer's stormwater management plan is compliant with the regulations lies solely with

◀ PREV NEXT ▶ SUBMIT



Asking the Right Questions in Stormwater Review

Asking the Right Questions in Stormwater Review



ArcGIS Exp rutgers.ma



Is the sole approver of a stormwater management plan

Designs a plan to maintain groundwater recharge, reduce sediment runoff and reduce runoff rates

Understands how to meet BMPs for stormwater management


Understands a permit from NJDEP is not an approval of the stormwater management plan

Municipal Official Applicant/Developer

◀ ▶ ◯ ◀ PREV NEXT ▶ SUBMIT

- **Expand *Stormwater Management in Your Schoolyard* program in urban, CSO communities**
 - Stormwater Management in Your Schoolyard Teacher In-Service
 - Technical assistance for Demonstration/Education programs
 - Samsel Upper Elementary School (Sayreville, NJ),
 - Milford Public School (Milford, NJ)
 - Demonstration Projects and Formal/Informal Education
 - Malcolm X Shabazz High School (Newark, NJ)
 - Grace Wilday Junior High School (Roselle, NJ)
 - Jersey City Public School #5 (Jersey City, NJ)
 - Samuel E. Shull Middle School (Perth Amboy, NJ)



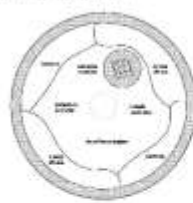


SAMSEL UPPER ELEMENTARY SCHOOL
Address: 585 Oxford Rd, Parsippany, NJ

NOTES:

1. CONSTRUCTION SHALL BE ACCORDING TO THE LATEST EDITIONS OF THE NEW JERSEY DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
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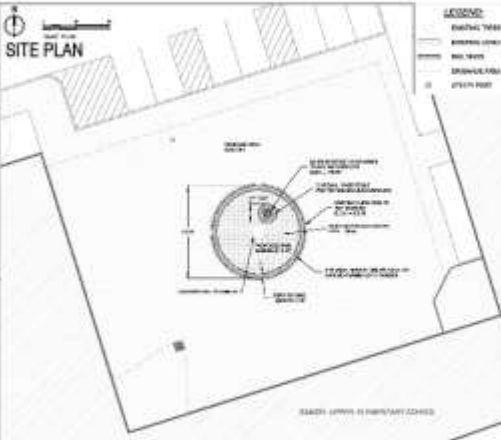
PLANTING PLAN (1/4")



QUANTITY	PLANT SPECIES
15	10 Lobelia cardinalis (Cardinal Flower)
30	10 Petrorhiza purpurea (Purple Coneflower)
10	10 Aster novae-angliae (New England Aster)
15	10 Achillea ptarmica (Savoy Milkweed)
30	20 Juncus effusus (Soft Rush)
25	18 Carex sp. (Sedge)

PLANT LANDSCAPE PLUGS 24 INCHES O.C.
PLANT LANDSCAPE QUARTS 34-36 INCHES O.C.


SITE PLAN




LEGEND:

- EXISTING TREES
- EXISTING CONCRETE
- NEW WALK
- BRICK PAVING
- GRAVEL FILL

DETAILS (1/4")





New Jersey Agricultural Experiment Station

Christopher C. Ortoft, Ph.D., P.E.
Extension Specialist in Water Resources,
Associate Professor in Environmental Sciences

Water Resources Program
Rutgers Cooperative Extension
New Jersey Agricultural Experiment Station
Rutgers, The State University of New Jersey
14 College Farm Road • Room 232
New Brunswick • New Jersey 08901

http://www.water.rutgers.edu
corto@carter.rutgers.edu

848-932-0711
Fax: 932-0044

September 2, 2014

Steven Quinn
Science Teacher
Milford Public School
7 Hillside Avenue
Milford, NJ 08848

RE: Teacher-In Service Program Milford Public School Technical Assistance


Steven,

Thank you for your interest in the Rutgers Cooperative Extension (RCE) Water Resources Program. We are happy to hear that through your participation in the Teacher-In Service Program held in January 2014 that you were able to provide your 7th and 8th grade students education on the importance of stormwater management with the use of rain gardens and native plant selections.

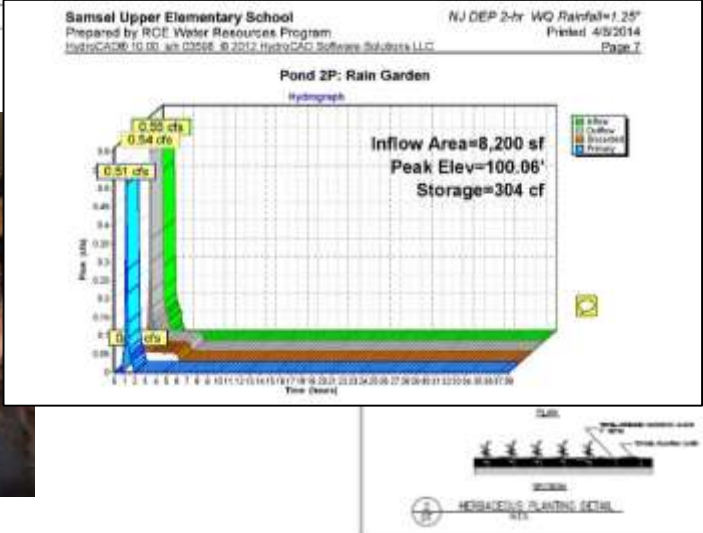
The RCE Water Resources Program is funded in-part by the New Jersey Agricultural Experiment Station (NJAES), which receives state and federal financial support. Our projects and programs are made possible through grants and agreements with our project partners and communities throughout New Jersey. Financial support from our project partners allows the RCE Water Resources Program to leverage the resources available through Rutgers University and apply them to real-world issues threatening the quality of our state's waters and the quality of life of our citizens.

The Teacher-In Service program was made possible from grant funding focused on educating educators about stormwater management and rain gardens in the school system and enabling educators, like yourself, to teach future generations about the importance of stormwater management. Through your technical support application, the RCE Water Resources Program was able to leverage additional grant funding to provide the Milford Public School with a complete rain garden site plan and planting plan. Our hope with providing this technical support was that you would work with the municipal Department of Public Works to excavate the site area and work with the parent and school association to raise funding towards mulch and plant materials needed for installation.

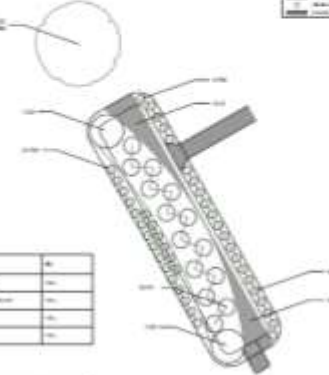
The RCE Water Resources Program does not currently have a funding source to provide full installation services for the Milford Public School rain garden. As our mission is to identify and address community water resources issues through sustainable and practical science-based solutions, we would like to see the rain garden installed. To assist with the installation effort, the RCE Water Resources Program can provide construction oversight for up to one day during the rain garden installation. We look forward to hearing from you regarding the selected installation date of Milford's rain garden.

Sincerely,

Christopher C. Ortoft, Ph.D., P.E.

C: Jessica T. R. Brown
Rosana Da Silva
Jasminah Bergstrom



PLANTING PLAN (1/4")



PLANTING PLAN

PERSONNEL & GRADES PLAN (BT)

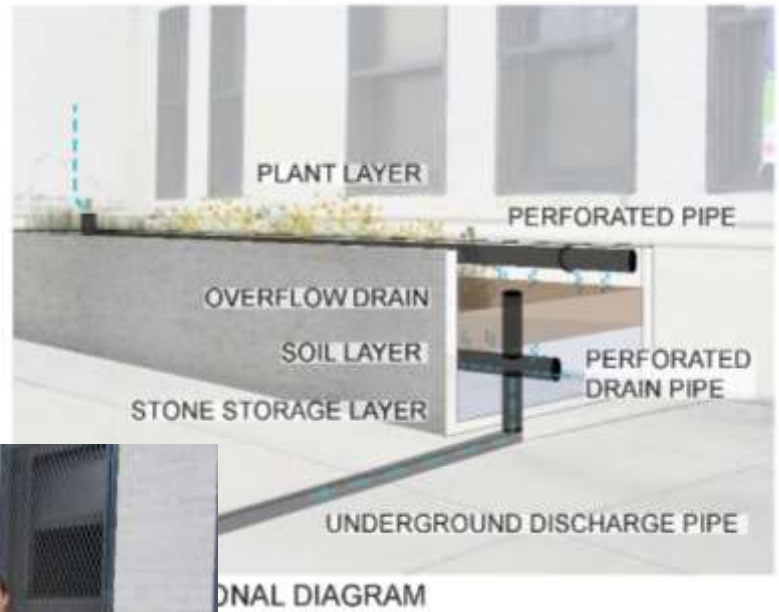
NO.	NAME	GRADE	DATE
1	Christopher C. Ortoft	Ph.D., P.E.	09/02/14
2	Jessica T. R. Brown	Ph.D.	09/02/14
3	Rosana Da Silva	Ph.D.	09/02/14
4	Jasminah Bergstrom	Ph.D.	09/02/14

SOURCE PLANT LIST

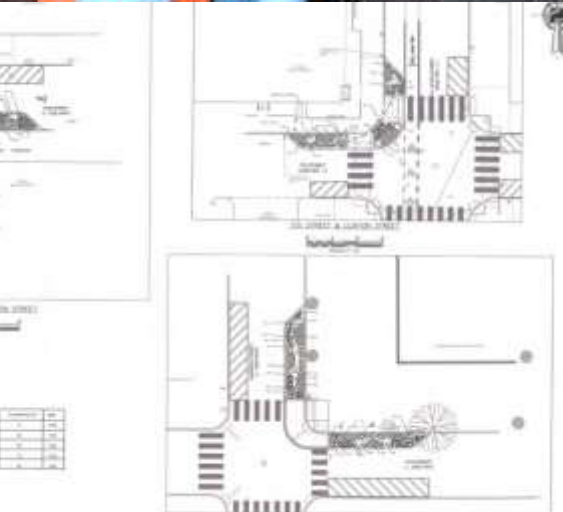
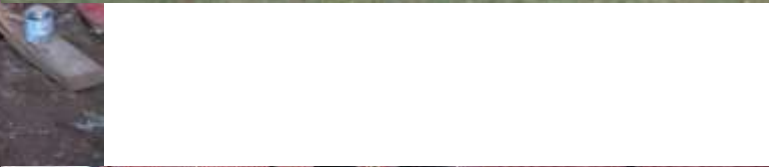
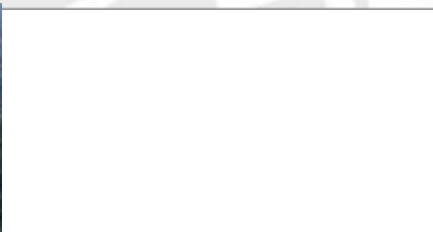
NO.	PLANT NAME	DATE
1	Lobelia cardinalis	09/02/14
2	Petrorhiza purpurea	09/02/14
3	Aster novae-angliae	09/02/14
4	Achillea ptarmica	09/02/14
5	Juncus effusus	09/02/14
6	Carex sp.	09/02/14











NO.	DESCRIPTION	QTY
1
2
3
4
5
6
7
8
9
10

Nine (9) demonstration projects

Currently, over **1,000 school children** are reached through education

565 municipalities have access to resources

Leveraged private, federal, state, and municipal funds to support future work

POTENTIAL PROJECT SITES WITHIN STUDY AREA

- 1 ROBERT H. WILENTZ ELEMENTARY SCHOOL
- 2 PERTH AMBOY VOCATIONAL SCHOOL
- 3 ASSUMPTION CATHOLIC CHURCH/SCHOOL
- 4 PERTH AMBOY HIGH SCHOOL
- 5 EDWARD HRALESKI JR. EARLY CHILDHOOD CENTER
- 6 PERTH AMBOY BUSINESS PARK
- 7 JAMES J. FLYNN ELEMENTARY
- 8 WASHINGTON PARK
- 9 SAMUEL E. SHILL MIDDLE SCHOOL
- 10 ACADEMY FOR URBAN LEADERSHIP CHARTER HIGH SCHOOL
- 11 ST. STEPHEN'S CAMPUS
- 12 PERTH AMBOY CITY HALL
- 13 HARBORVIEW CHILD CARE CENTER
- 14 SCIENCE OF SPIRITUALITY MEDITATION CENTER
- 15 FIRST BAPTIST CHURCH
- 16 TRAFFIC CIRCLE PARK



PERTH AMBOY

The City of Perth Amboy is located in Middlesex County and covers an area of approximately 10 square miles. The City of Perth Amboy has a population of 11,882 according to the 2010 US Census. The City is a diverse community with a mix of ethnicities and languages. The City of Perth Amboy is a coastal town with a rich history and a vibrant culture. It is a coastal town with a rich history and a vibrant culture. It is a coastal town with a rich history and a vibrant culture.



WHAT IS STORMWATER?

When rainfall hits the ground, it can soak into the ground or flow across the surface. When it soaks into the ground, it is called "infiltration." When it flows across the surface, it is called "stormwater runoff." Stormwater runoff often carries pollutants such as oil and grease, sediment, and other debris into the ground. Infiltration can also carry pollutants into the ground. Infiltration can also carry pollutants into the ground. Infiltration can also carry pollutants into the ground.



Impervious Cover Assessment
Samuel E. Shill Middle School, 509 Hull Avenue

PROJECT LOCATION:

SITE PLAN:

1 IMPERVIOUS COVER REDUCTION: A variety of rain barrels will help capture the rainwater that runs down the building's roof during storms, reducing the building's dependence on a public sewer system and allow the rainwater to be collected and used in the building.

2 BIORETENTION SYSTEM: On this property, a bioretention system can be used to collect, detain, and infiltrate stormwater, reducing runoff and increasing groundwater recharge.

3 POROUS ASPHALT: Porous asphalt pavement allows water to infiltrate the ground, reducing runoff and increasing groundwater recharge.

4 DEFWAXING: The parking lot adjacent to the school building will be defwaxed to reduce runoff and increase groundwater recharge.

5 BIOWATER TREATMENT: A variety of rain barrels will help capture the rainwater that runs down the building's roof during storms, reducing the building's dependence on a public sewer system and allow the rainwater to be collected and used in the building.

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...and repair our watermain, water lines, and other critical infrastructure. We will also be working with private industry to develop innovative solutions for water infrastructure. We will also be working with private industry to develop innovative solutions for water infrastructure.

Rutgers Cooperative Extension Water Resources Program

www.water.rutgers.edu

Jessica T. R. Brown, PE

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RUTGERS
New Jersey Agricultural
Experiment Station

