



Green Infrastructure Training in New Jersey Program

June 15, 2017

Passaic Valley Sewerage Commission

Newark, NJ



"Protecting Public Health and the Environment"

Defining Site Parameters and Key Stakeholders for Stormwater Management

Jeremiah Bergstrom, LLA, ASLA

jbergstrom@envsci.rutgers.edu

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www.water.rutgers.edu



Rutgers Cooperative Extension

Rutgers Cooperative Extension (RCE) helps the diverse population of New Jersey adapt to a rapidly changing society and improves their lives through an educational process that uses science-based knowledge.



Water Resources Program

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

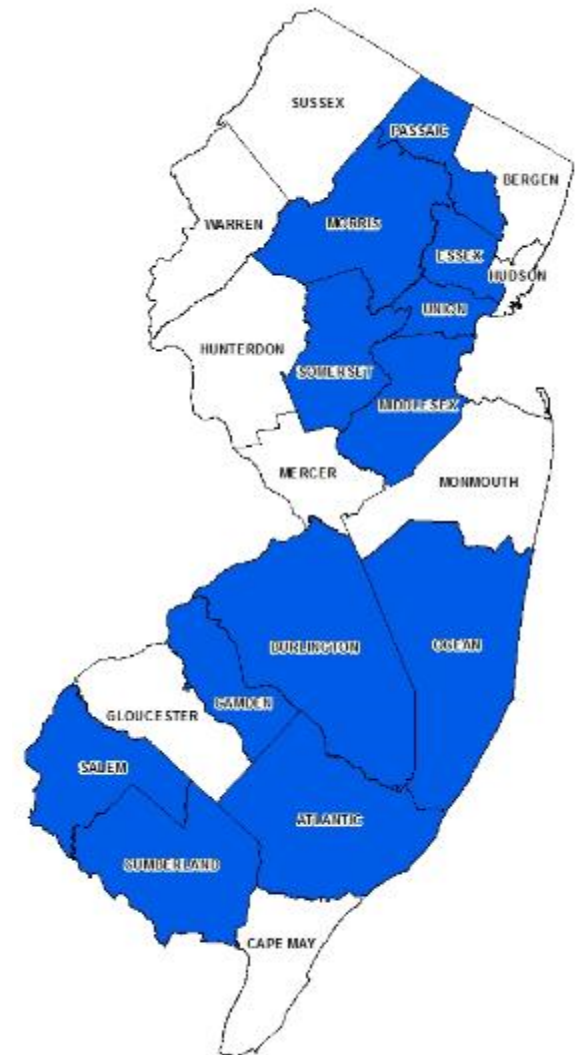
The Water Resources Program serves all of New Jersey, working closely with the County Extension Offices.



Environmental County Agents

The Environmental County Agents teach people new skills and information so they can make better informed decisions and improvements to their businesses and personal lives.

- Michele Bakacs, Middlesex and Union
- Pat Rector, Morris and Somerset
- Amy Rowe, Essex and Passaic
- Mike Haberland, Camden and Burlington
- Sal Mangiafico, Salem and Cumberland
- Steve Yergeau, Ocean and Atlantic



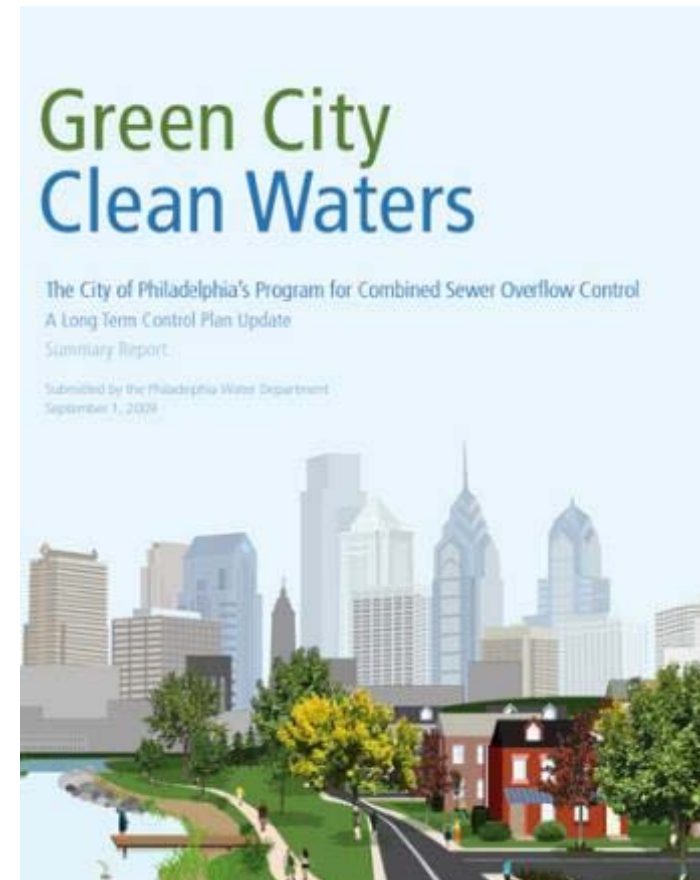
Interesting New Jersey Facts

- New Jersey is 8,723 square miles
- Population is 8,864,590 (1,171/mi²)
- 1,055 square miles of impervious cover = 12.1%
- 1" of rain = 18.2 billion gallons
- 90% of NJ's rivers are impaired
- Flooding impacts over 500 of New Jersey's municipalities
- 212 Combined Sewer Overflows (CSOs)



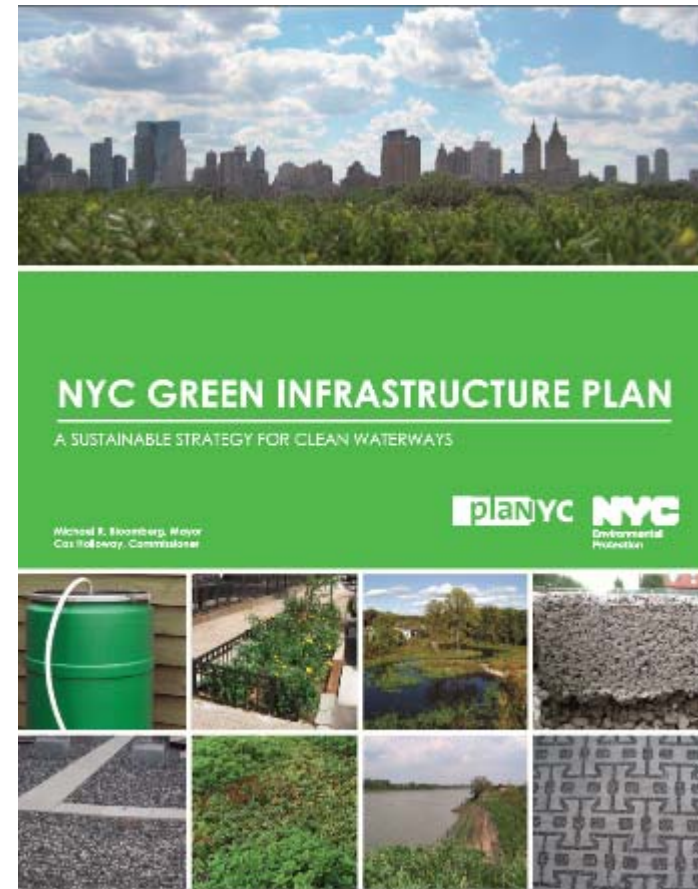
Emerging Issues for Green Infrastructure

1. What are others doing?
2. Are there new regulations being proposed or a new interest in enforcing existing regulations?
3. What are stakeholders concerned about?



What Are Others Doing?

- Philadelphia and New York are focusing a lot of attention on eliminating their combined sewer overflows (CSOs)
- Significant funding is being allocated (\$2.4 to \$2.5 billion)
- Green infrastructure is a major component of these new investments



New Regs or Enforcing Existing Regs?

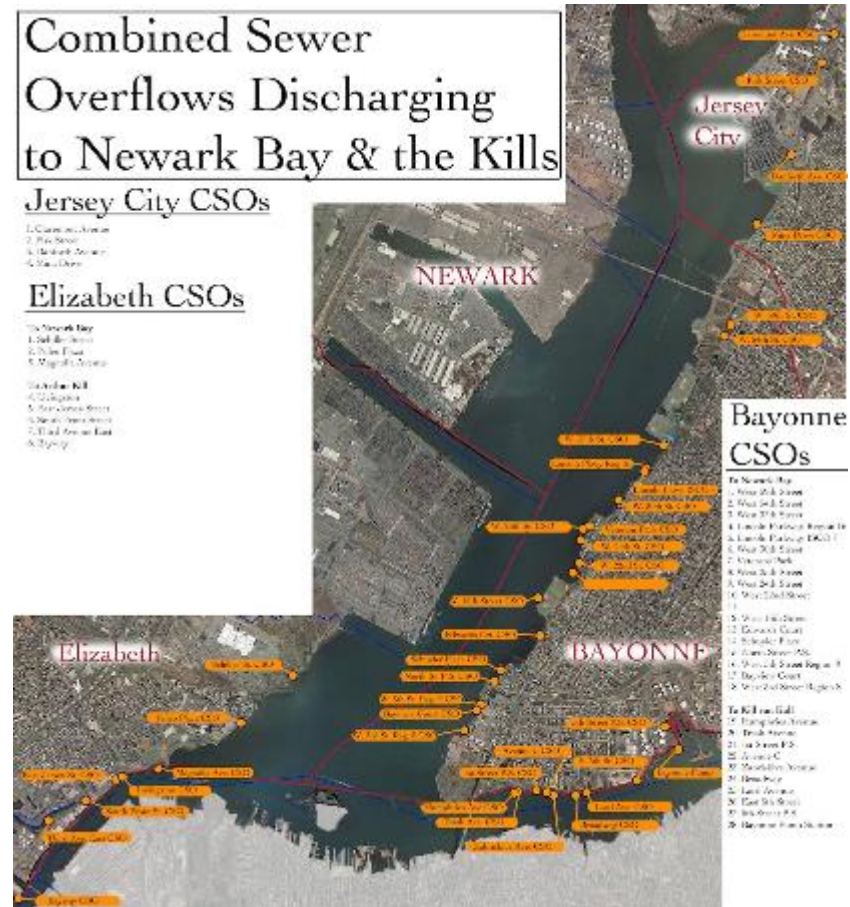


- US EPA has developed Administrative Consent Orders (ACOs) with CSO communities including Philadelphia and New York
- Baykeeper and Riverkeeper have filed lawsuits pushing New Jersey to address CSO issues
- New Jersey is working to address CSOs prior to US EPA stepping in



Stakeholder (CSO Permittees) Concerns?

- Avoiding ACO with US EPA
- Avoiding law suits with advocacy groups
- Minimizing the cost to address the problem
- Engaging the public early to support costs for new investment



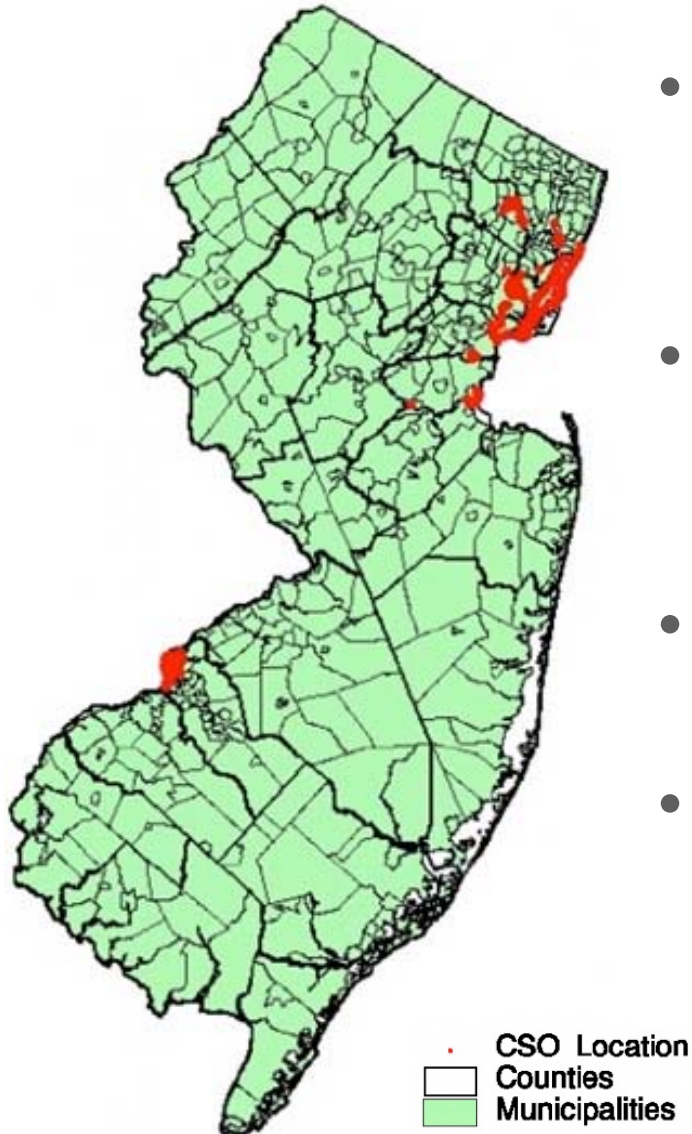
Stakeholder (Urban Community) Concerns?



- Remediate flooding and raw wastewater in city parks, streets, and basements
- More green spaces for a better quality of life
- Job training and creation
- Low cost water sources for community gardens and landscaping



New Jersey's Combined Sewer Communities



- Only 21 of the 565 municipalities in New Jersey have combined sewer systems.
- The remaining have municipal separate storm sewer systems (MS4s)
- MS4s are also being regulated by New Jersey
- MS4 communities can also benefit from installing green infrastructure



Community-based Green Infrastructure

Working with a **collaborative group** of local and state governments officials, utility authorities, residents, and community organizations to **plan, teach, design, implement and maintain** green infrastructure programs.



The Process...

- Green Infrastructure Feasibility Plan
- Project Partnerships
- Site Investigations
- Surveys
- Design
- Funding & Contracting
- Education & Training



The Camden SMART Team (*Stormwater Management and Resource Training*)



City of Camden



Cooper's Ferry Partnership



New Jersey Department of Environmental Protection



Rutgers Cooperative Extension Water Resources Program



Camden County Municipal Utilities Authority (CCMUA)



New Jersey Tree Foundation



SMART Green Infrastructure Projects



Green Infrastructure Project Mapping for Camden

<http://water.rutgers.edu/Camden>

The screenshot displays the website for the Camden Green Infrastructure Initiative. The browser address bar shows the URL water.rutgers.edu/Camden/index.html. The page title is "Camden Green Infrastructure Projects".

On the left side, there is a navigation menu with two tabs: "ALL SITES" and "COMPLETED PROJECTS". Below the "COMPLETED PROJECTS" tab is a grid of 12 project photos, each with a numbered label:

- 1 29th St. Biobasins
- 2 Baird CSO
- 3 Beckett Street Garden
- 4 Brimm School Rain Garden
- 5 Cramer Hill Nature Preserve
- 6 Farnham Park
- 7 Ferry Avenue Library Rain Garden
- 8 Ferry Avenue Rain Garden
- 9 Front St. Community Garden Rainwater Harvesting
- 10 Haddon Avenue
- 11 Liney Ditch Park
- 12 Neighborhood Center

The main content area features a satellite map of Camden, New Jersey, with various neighborhoods highlighted in different colors. Numerous blue numbered markers are placed across the map, corresponding to the project locations. The neighborhoods labeled on the map include Cooper's Point, Pyne Point, Cramer II, Dudley, Stoughton, Maritz, Parkville, Morgan Village, and others. The map also shows the Delaware River and surrounding urban areas.

At the bottom of the browser window, the Windows taskbar is visible, showing the system tray with the date and time: 7:05 AM, 4/8/2016.



Doing Infrastructure Green

NEWARK DIG

EST. 2013

www.newarkdig.org

Facebook @NewarkDIG

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DOING INFRASTRUCTURE GREEN

- City of Newark
- Clean Water Action & Clean Water Fund
- Greater Newark Conservancy
- Ironbound Community Corporation
- New Jersey Department of Environmental Protection
- New Jersey Tree Foundation
- NY/NJ Baykeeper
- MnM Consulting
- Passaic Valley Sewerage Commission
- Rutgers Cooperative Extension Water Resources Program
- Trust for Public Land
- Unified Vailsburg Services Organization
- Urban League of Essex County
- Victoria Foundation



**Ironbound
COMMUNITY
CORPORATION**



"Protecting Public Health and the Environment"



Newark DIG is...

- Committed to continuously improving the quality of life, health, and viability of the City of Newark and its residents through use of strategic collaborative methods, including:
 - community-driven urban design
 - public policy planning
 - environmental and social justice advocacy
 - education
 - local capacity building
- Our primary goal is the establishment of **sustainable green infrastructure** as the first line of defense to
 - better manage stormwater runoff
 - improve water quality & resilience to flooding
 - reduce combined sewer overflows (CSOs) with a focus on the Passaic River and its tributaries



Community Garden Rainwater Harvesting System at 45 Lyons Avenue



Community Pocket Park on GNC Adopt-a-Lot at 35 Murray Street

Hamilton Township Stormwater Management Implementation Program

- **Year 1 (2011 – 2012): Assessment & Recommendation**
 - June '11: Partnership between Hamilton Township & Water Resources Program established
 - September '11: Hydrology Report completed & published
 - February '12: Watershed & Stormwater Management Implementation Plan completed
- **Year 2 (2012 – 2013): Implementation**
 - Work towards completion of 11 tasks outlined in Implementation Plan
- **Year 3 (2013 – 2014): Mitigation**
 - Combine the 11 tasks into comprehensive Stormwater Mitigation Plan and Green Communities Program
- **Year 4 & 5 (2014 – 2016): Integration**
 - Complete infrastructure assessments and begin detailed evaluation of site specific problems & issues



Hamilton Stormwater Basin Assessment

- Mapped 312 stormwater basins
- 142 require cleaning
- 153 require maintenance
- 116 require repair on inlets or outlets
- 80 were found to have standing water
- Mapped ***Priority Basins*** needing cleaning, maintenance, or repair needs.
- 111 basins were found to be in good condition



Hamilton Rain Garden Demonstration Project

Excavation completed in partnership with
Hamilton DPW (August 20, 2013)



Nottingham High School



Township of Montclair, Essex County

**GREEN
INFRASTRUCTURE
FEASIBILITY STUDY**

MONTCLAIR

Township of Montclair, Essex County

Rain Barrels Are Here and Going Fast!

Posted on August 11, 2014

by Siobhan McCarthy



Rain barrels are here and going fast! If you have not yet reserved an Ivy® Rain Barrel, you can still do so as another order has been placed due to the high demand. Rain barrels can help conserve water by collecting runoff from your roof to be re-used for watering plants and other non-potable purposes. This also prevents runoff from collecting pollutants before going into storm drains.

Retailing at around \$150 each, the Township purchased the 50-gallon “Ivy” Rain Barrels in bulk for \$72 each. To encourage their use, they are now being sold to residents for only \$36, saving residents over \$100 per barrel.

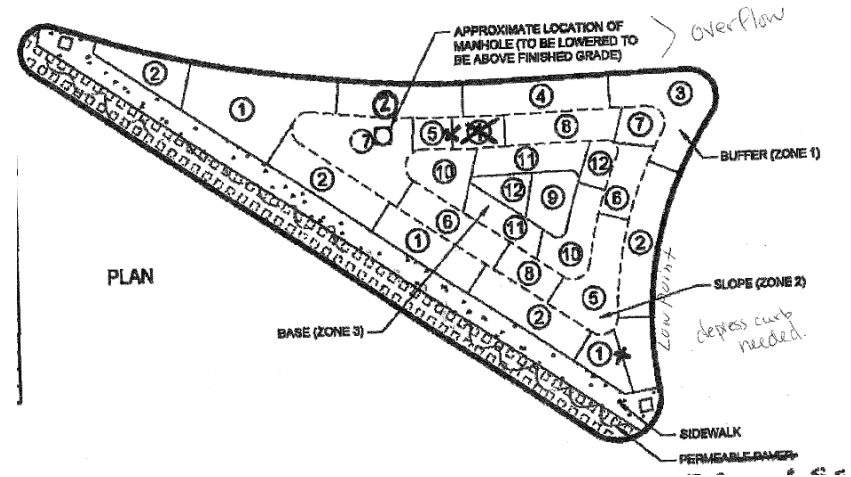
WaterWise Montclair will help you save water. For more information, or to order your Ivy® Rain Barrel, contact Gray Russell at the office of Environmental Affairs at 973-509-5721 or email grussell@montclairnjusa.org.

After scheduling an appointment, rain barrels will be purchased and collected at the Water Bureau's offices, 54 Watchung Avenue, Montclair, 07043; checks should be made payable to “Township of Montclair”.

For additional water conservation tips, [visit the township website here](#).



Montclair Rain Garden Traffic Triangle



GETTING STARTED



New Jersey Guidance Documents



GUIDANCE DOCUMENT:
NJDEP Review of Green Infrastructure as
a Component of LCTPs (February 2017)



Building Partnerships

- CSO communities are required to implement a public participation process as part of a LTCP
- Community engagement is critical to **prioritizing** green infrastructure efforts
- Public support is essential to securing **acceptance** of “visible” green infrastructure



Identifying Areas of Concern

- Know your community
- Map resources and infrastructure and prepare a digital database (GIS)
- Understand impervious areas and stormwater flow patterns
- Meet with residents
- Tour your community when it rains!
- Prepare a community-wide assessment



Assessing Potential Project Sites

Opportunities for Green Infrastructure

- Eliminate impervious surface
- Reduce or convert impervious surface
- Disconnect impervious surface

Demonstration Green Infrastructure Project Sites

- Schools
- Community centers
- Libraries
- Municipal properties
- Community gardens
- Fire houses
- Public works facilities
- Parking lots

NOTE: Review Site Assessment Checklist



Site Assessment Procedures

- Conduct a desktop analysis to identify potential project sites
- Print/download aerial photos of sites
- Conduct field visits
- Complete site assessment checklist for each site
- Prioritize sites



Prioritize Project Sites:

- Visibility
- Accessibility
- Willing ownership
- Feasibility
- Effectiveness
- Sustainability
- Cost



Prepare a Plan

- Establish goals
- Describe priorities
- Identify projects
- Define partnerships
- Discuss challenges & opportunities
- Propose a timeline
- Estimate costs



Identifying Green Infrastructure Activity

- Break into groups of three
- Use your Green Infrastructure Site Assessment Checklist
- Discuss as a group opportunities for green infrastructure
 - Don't forget how to prioritize project opportunities! (i.e., Visibility, Accessibility, Feasibility, Effectiveness, Sustainability)



RUTGERS

THE STATE UNIVERSITY
OF NEW JERSEY

QUESTIONS?

Jeremiah Bergstrom, LLA, ASLA

jbergstrom@envsci.rutgers.edu

