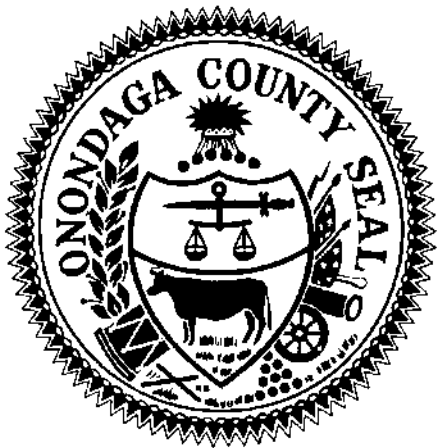


# Save the Rain Program Overview



Onondaga Lake  
Amended Consent Judgment (ACJ)  
Compliance Program,  
June 2011

Save the Rain 

The logo for "Save the Rain" features three blue water droplets of varying sizes above a green leaf-like shape.

# History

- 1988 – Atlantic States Legal Foundation files lawsuit against County
- 1989 – Litigation settled through METRO consent judgment
- 1998 – METRO consent judgment replaced with Amended Consent Judgment (ACJ)
- 1<sup>st</sup> ACJ amendment May 1998
- 2006 ACJ Amended to include consolidation of ammonia and phosphorus treatment and Harbor Brook conveyances and RTF
- 3<sup>rd</sup> Amendment April 2008 (Extension)
- 2009 ACJ amended to authorize use of Gray and Green infrastructure

## Onondaga Lake Facts

Watershed: 285 Square Miles

1 Mile Wide – 4.6 Miles Long

Average Depth: 35 feet

Max Depth: 63 feet

1940 – Swimming Banned

1970 – Fishing Banned

# Metropolitan Syracuse Treatment Plant

- Largest Biological Aerated Filter Process in US
- First large scale ballasted flocculation process for phosphorus removal in North East
- Project modified to two phases to save time and money; built on Brownfield site
- Meeting All Permit Requirements
- Upgrades Cost - \$135,000,000





## Midland Ave RTF

# CSO Storage, Treatment and Conveyance Project

5.5 Million Gallons of storage (sub-surface)

Swirl Concentrators



Captures CSOs 039, 041, 042, 043, 044

Midland Regional Treatment Facility under construction

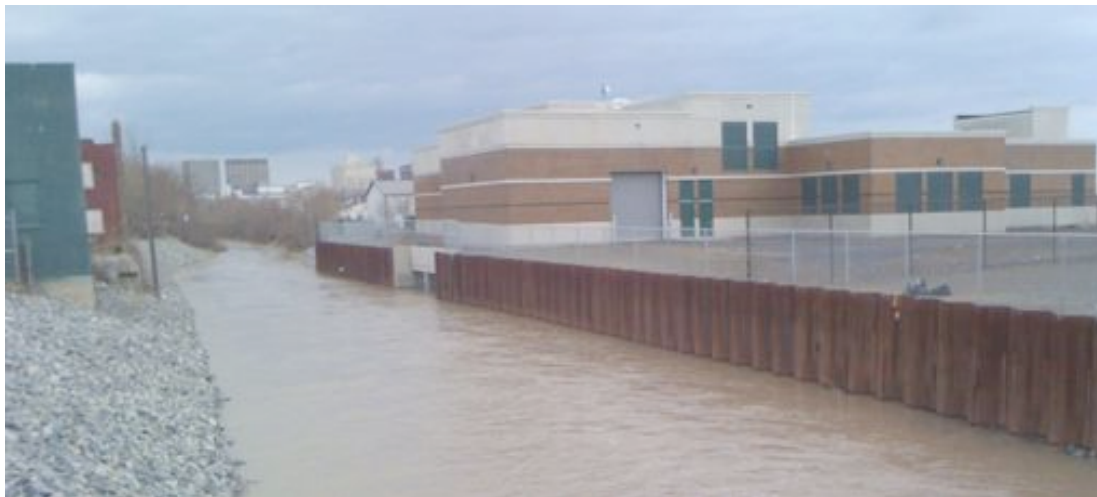
# Midland Avenue Regional Treatment Facility (RTF)

- Storage, Swirl Concentrators and Disinfection to capture one year design storm
- Cost: \$79.1 mm – Grants \$ 54.4 mm, Loans \$ 24.7 mm
- Opposed by Many Stakeholders & Local Officials
- Significant community disruption during construction
- Conveyances connect 60% of Midland Sewershed
- Will be Evaluated for Efficiency and Optimization

# Environmental Justice

*Green Infrastructure means...*

- *Injustice of Midland plant will not be repeated*
- *Onondaga Creek & Harbor Brook will be cleaner*
- *Community investment and beautification instead of further disruption*





Conveyance project under construction through south side neighborhood causing significant disruption





Large diameter conveyance pipeline dwarfs front end loader and operator



CSO 020 and 021



Sewer Separation

# Syracuse would be pioneer in green approach to stormwater management

SYRACUSE, FROM PAGE A-1  
back its construction of concrete-and-steel facilities and place more emphasis on natural systems that use plants and soils.

Going green would cost less, county officials said, but it's unknown how much less.

*"Syracuse will be one of the leaders in the country, easily, if this approach is taken and effectively implemented. It's a big deal."*

— James M. Tierney,

DEC's assistant commissioner for water resources

The tanks would be underground or "mostly underground," said engineer Matthew J. Marko, vice president of CH2M Hill, a consultant. The county also would undertake several sewer separation projects and other traditional



# Green Infrastructure

- Solution to capacity problems with underground storage – reduce the rain!
- Proposed by Onondaga Nation

## Victory!! Onondaga County Scraps Sewage Plants in Favor of Green Infrastructure

Lindsay Speer

Change is in the air, and it smells sweet. Onondaga County Executive James Mahoney announced on May 2, 2008 that the County will not award construction bids for the proposed Clinton Regional Treatment Facility (CRTF) in Amherst Square. Instead, it will explore more environmentally and economically sound options with the State of New York, Atlantic States Legal Foundation, City of Syracuse, and, for the first time, the Onondaga Nation and other community stakeholders.

### Persistence Pays Off

Syracuse has an antiquated combined sewer system, in which stormwater runoff is directed into the sanitary sewers. A heavy rainfall results in Combined Sewer Overflows (CSOs), dumping sewage directly into Onondaga Creek. Onondaga County's previous solution was to treat the sewage with chlorine before discharging it into the

excited year-round, not just after storms, calling into serious question the effectiveness of the CRTF's end-of-pipe solution.

### Going Green

In January 2008, the federal Environmental Protection Agency released a report urging municipalities to use green infrastructure, such as rain barrels, green roofs, and other methods to keep stormwater out of the sewer system. These developments combined with new County and State leadership this year to create a perfect storm for revisiting the mandate of the Amended Consent Judgement (ACJ), which dictates the cleanup of sewage pollution in Onondaga Creek and Harbor Brook.

On June 18th, the Partnership for Onondaga Creek gave a presentation to Onondaga County and the NY's Department of Environmental Conservation to outline alternatives to the remaining phase of the Midland plan: a \$37 million, 12



Rain barrels are a simple solution actively recommended for protecting Onondaga Creek and other waterways. Photo: gary210 on Flickr.com

to capture water using residential rain barrels and green roof installation on commercial properties. The installation of rain barrels

Partnership for Onondaga Creek  
2010 - lspeer@mrss.com

## *Catch the Rain:*

### **A new strategy for clean waterways in Syracuse**

*Communication and Education Plan Recommendations for the management of stormwater and combined sewer overflows (CSOs) in Onondaga County, New York*

*December 2008*

This document was developed through a collaborative process by the Green Infrastructure Communications and Education Committee. It is intended to provide a guide or road map for Onondaga County and the many others who are collaborating in this effort on how to inform and educate elected officials, local residents and other stakeholders on: 1) what is being done; 2) why it is being done; and 3) who has what role in carrying it out.

Khris Dodson, Committee Chair, on behalf of the Atlantic States Legal Foundation  
David Coburn, Onondaga County Executive's Office  
Sarah Eckel, Citizens Campaign for the Environment  
Christa Glazier, Office of Congressman Walsh  
Stephanie Harrington, New York State Department of Environmental Conservation  
Jean Kessner, AIDS Community Resources  
Lionel Logan, Partnership for Onondaga Creek  
Andy Maxwell, Community Development, City of Syracuse  
Amy Samuels, Cornell Cooperative Extension  
Lindsay Speer, Environmental Consultant for the Onondaga Nation  
Bruno Takahashi, SUNY ESF/ Atlantic States Legal Foundation  
Melissa Young, Environmental Finance Center, EPA Region 2

# Why Is Onondaga County Using Green Infrastructure?

- Eliminates pollutants at the source
- Reduces discharge volumes to creeks, rivers, lakes, and wastewater treatment facilities
- Reduces flooding
  
- Reduces consumption, Gray O&M costs, energy and heat island effects
- Improves neighborhood aesthetics, habitat, biodiversity, and air quality
- Can be less disruptive than large Gray Infrastructure projects
- Green Infrastructure is often more cost-effective than Gray Infrastructure

# Green Infrastructure Program Summary

- 6.3% annual CSO volume capture
- 247 million gallons
- Multiple Projects Throughout Sewersheds
- Compliments Gray Program
- Total Gray + Green volume capture:
  - 85.2% by 2013
  - 91.4% by 2015
  - 93.0% by 2016
  - 95.0% by 2018
- Extensive monitoring & reporting required

## Cities To Watch:

- Philadelphia, PA
- Portland, OR
- Cincinnati, OH
- **Syracuse, NY**
- New York, NY
- Milwaukee, WI
- Chicago, IL
- Kansas City, MO
- Cleveland, OH

# Green Improvement Fund (GIF)

Program developed to provide financial incentives to private and 501 ( c ) 3 property owners for the implementation of green infrastructure.

- 3 million dollar pilot program
- Storm water management on private property is vital to success of green infrastructure program
- Grant funding for targeted sewer sheds in the City of Syracuse (Midland, Harbor Brook, Clinton)
- GIF Program Committee created to review funding opportunities for potential projects
- Applications are reviewed by Program Committee for final recommendation on funding level
- Over \$1 Million dollars currently allocated under program

## Program Highlights

- 30 Applications submitted to-date
- 7 completed projects in 2010:
  - King & King Architects
  - Dunbar Association
  - Near Westside Initiative (2)
  - St. Lucy's Church
  - Jefferson Clinton Commons
  - Hotel Skyler
- Over 15 Projects slated for 2011

# Green Improvement Fund (GIF)



## Green Roof at King & King Architects

GIF grant award for the construction of an 11,200 sq ft. green roof on the new King & King Architects facility located in the Near West Side of the City.



## Porous Pavement at Dunbar Association

GIF grant award for the re-development of a parking lot at the Dunbar Center. The construction features a porous concrete section that collect storm water from the 12.800 sq. ft surface lot.





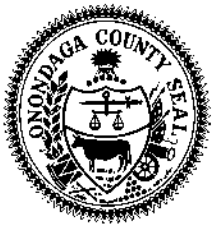
# Rain Barrel Program for Residences in the CSO 004 Sewershed Grant Funded (Green Innovations Grant Program)

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# Green Infrastructure Projects

Save the Rain Program Compliance



# Green Projects Completed/Underway

1. Parking Lot #21 (former “Farmer’s Market Lot”)
2. Pearl Street Parking Lot
3. Parking Lot #3
4. Creekwalk (Jefferson St. to Fayette St)
5. Rosamond Gifford Zoo - Primate Exhibit and Courtyard
6. Rosamond Gifford Zoo - Elephant Building and Grounds
7. Townsend Parking Lot B
8. Townsend Median Reconstruction
9. Hazard Branch Library Green Roof
10. Urban Forestry Grant / Tree Planting Projects
11. Rain Barrel Program Installations
12. Green Improvement Fund Projects  
(20+ applications to date):
  1. Jefferson Clinton Commons
  2. Dunbar Associates
  3. King & King Architects
  4. St. Lucy’s Church
  5. Lincoln Supply...and more...

Commercial Green Street,  
Harrison Street (OnCenter)



# Onondaga County Civic Strip

## Greening County Facilities Utilizing Multiple Green Infrastructure Technologies



Location	Green Technology	Impervious Drainage Area (sq. ft.)	Estimated CSO Volume Reduction (gallons)
Court House	Bioretention, Enhanced Street Trees	6,100	88,072
Civic Center	Vegetated Roof	68,600	990,444
War Memorial	Cistern System	20,300	293,090
Convention Center	Vegetated Roof	58,700	847,508
	Pavement Removal/Bioretention	9,650	139,326
	Bioretention	15,100	218,013
Sheriff's Headquarters	Vegetated Roof	15,100	218,013
	Porous Parking Lot	11,550	196,628
Criminal Court House	Vegetated Roof	22,400	323,410
	Porous Parking Lot	30,750	523,491
Public Safety Building	Vegetated Roof	29,000	418,701
Justice Center	Vegetated Roof	53,200	768,099
Steam Station	Vegetated Roof	3,400	49,089
Community Plaza	Bioretention	43,000	620,832
County Parking Lot B	Porous Parking Lot	53,940	918,280
Convention Center Parking Lot	Porous Parking Lot	95,950	1,633,462
Convention Center Garage	Downspout Diversion to Bioretention	72,500	1,046,752
	Pavement Removal/Bioretention	6,650	96,012
S. Townsend St. Median	Enhanced Street Trees	20,520	252,988

**TOTAL 656,510 9,642,210**

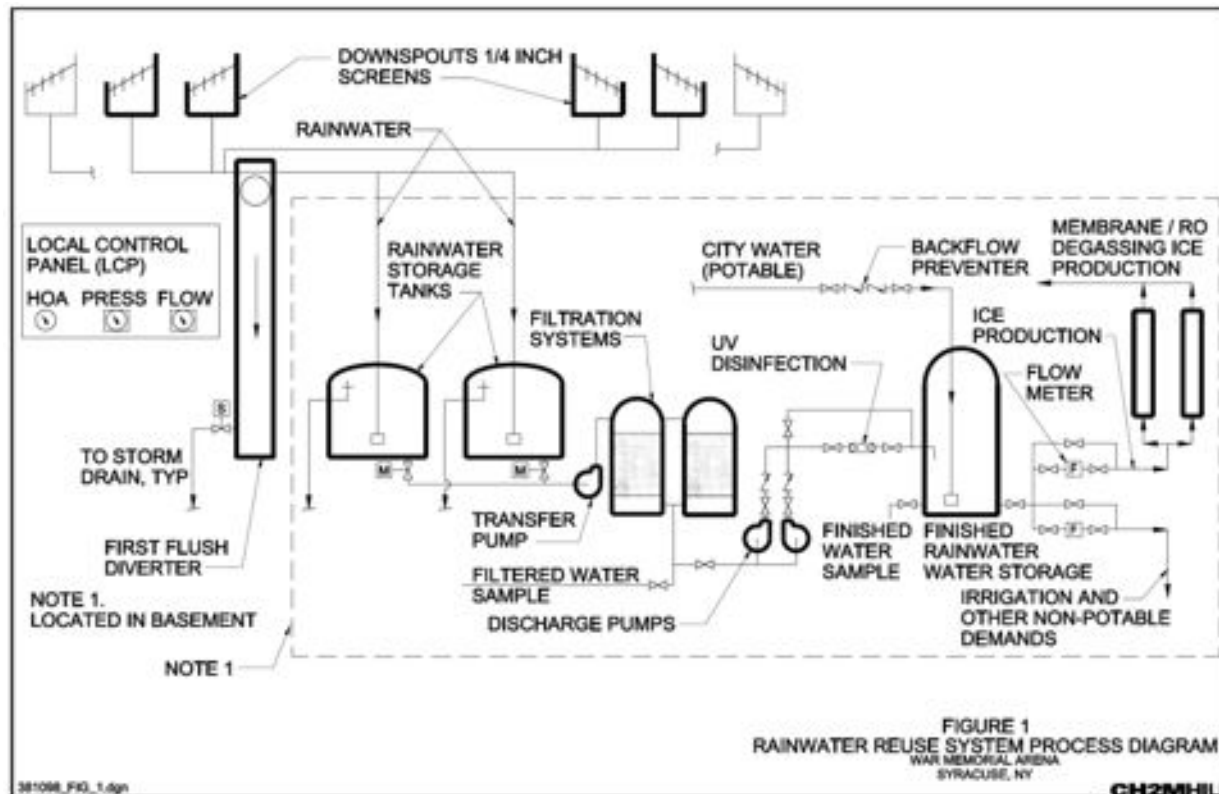
# Green Infrastructure 2011 Signature Projects

## OnCenter Convention Center Green Roof



# Green Infrastructure 2011 Signature Projects

## Water Reuse at OnCenter War Memorial



# Green Infrastructure 2011 Signature Projects

## Treatment Wetland and Restoration Project

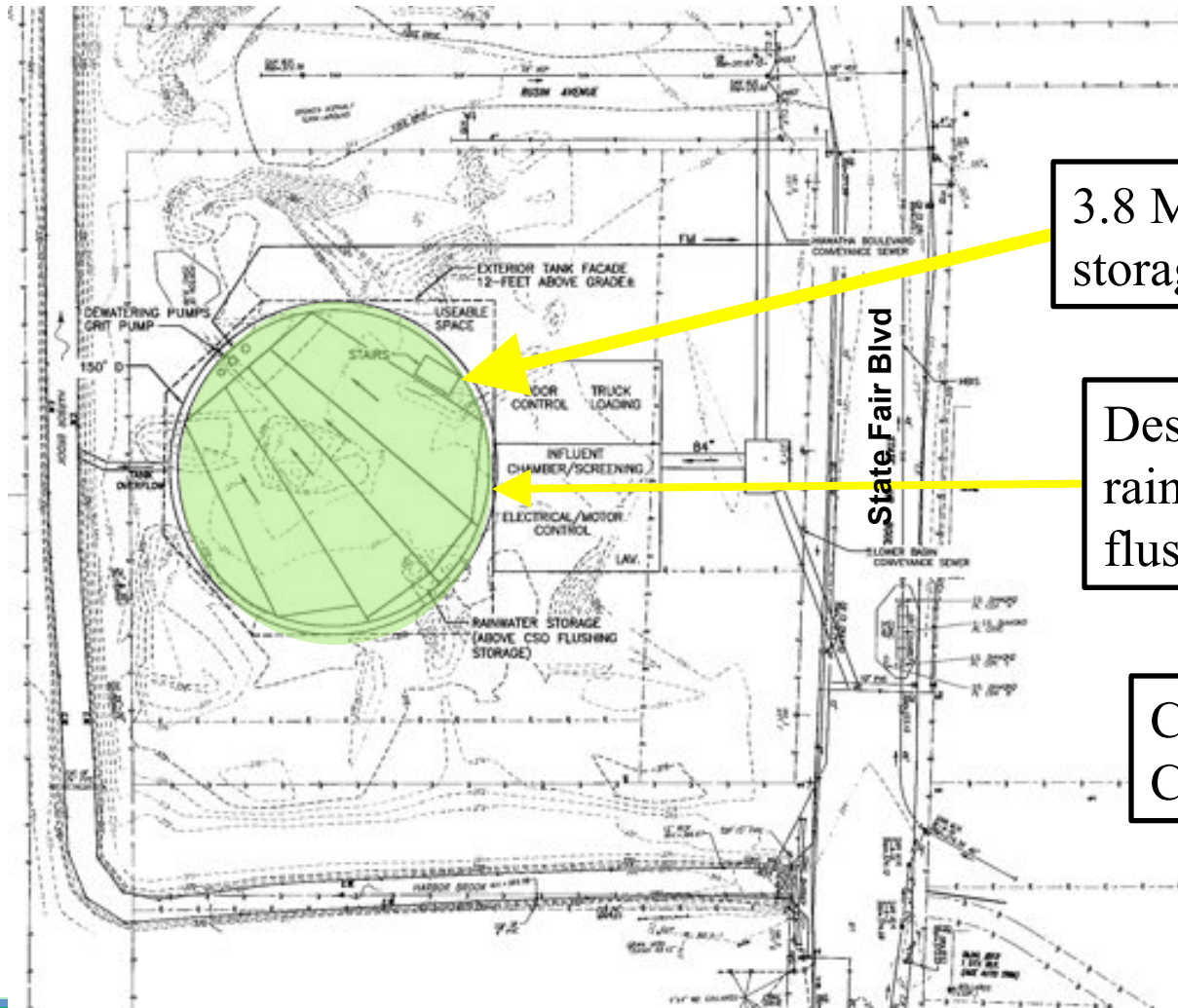


CSO 018

CSO 018  
Constructed  
Wetland

Harbor Brook

# Harbor Brook Storage Project



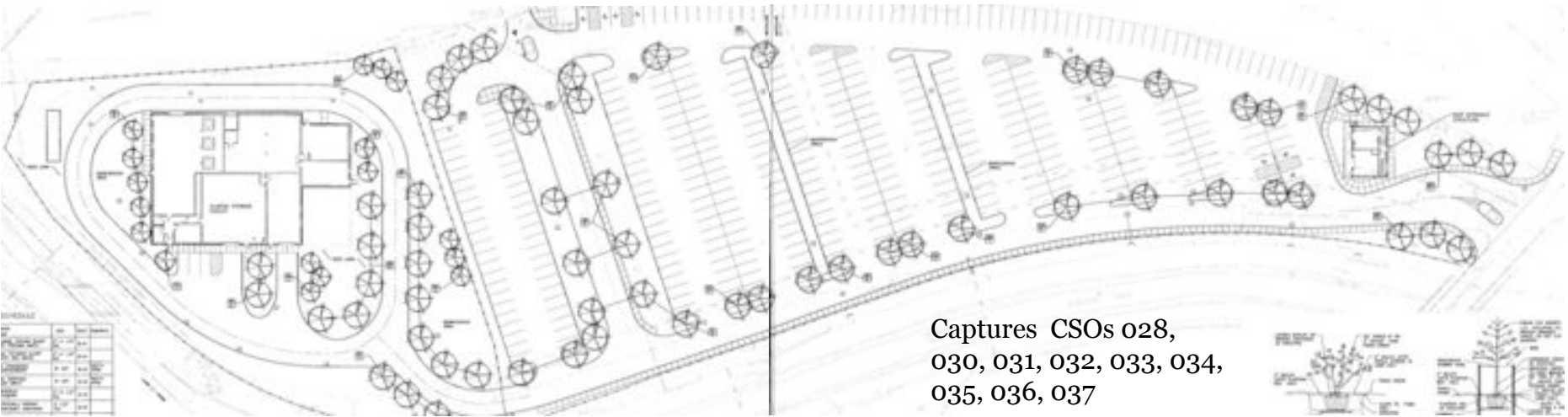
3.8 Million Gallons of storage (sub-surface)

Designed to capture rain water for system flushing/cleaning

Captures CSO 003, 004, 063



# Clinton Storage Project



Designed to capture rain water for system flushing/cleaning

6 Million Gallons of storage (sub-surface)



# Greening the Geddes Street Corridor



# Parking Lot #21 (Formerly “Farmer’s Market Lot”)



Before

After



# Pearl Street Parking Lot



# Parking Lot #3



**Porous Concrete**  
Captures over 700,000 gallons of stormwater annually

# Rosamond Gifford Zoo

## Primate Exhibit and Courtyard



Rain Barrels and Cisterns to harvest runoff from rooftops

Porous Pavement in Courtyard

Rain Garden along Primate Exhibit

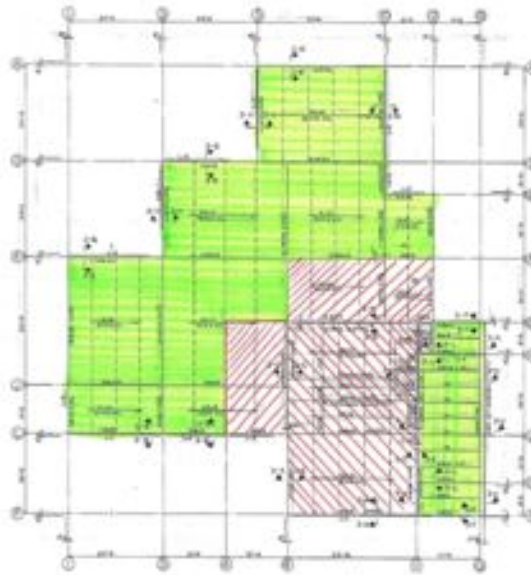
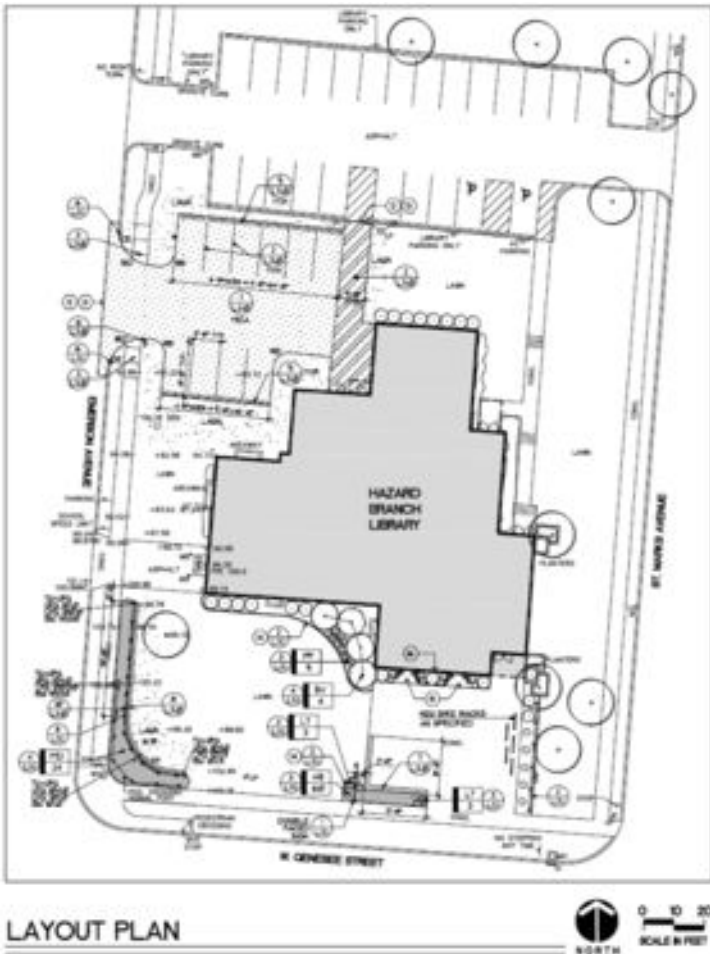
# Rosamond Gifford Zoo Elephant Exhibit (summer 2011)

6,000 sq.ft.  
Green Roof

Enhanced  
Stormwater  
Management



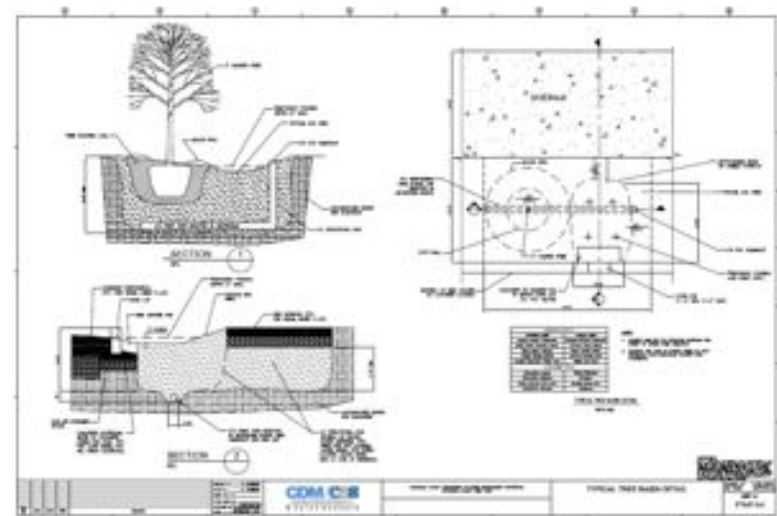
# Green Roof at Hazard Branch Library: Roof Membrane 2010; Green Planting, Spring 2011



Green Roof at SUNY ESF

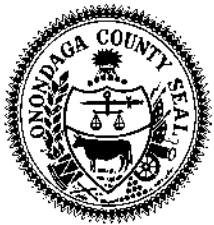


# Enhanced Street Trees



# Education & Outreach

Save the Rain



# Save the Rain Programs

- **Workshops**
  - **Intro to GI for Homeowners and Businesses**
    - Topics include basic principles of stormwater hydrology, examples of simple GI for homes (rain barrels and rain gardens), and other GI opportunities for the community and businesses.
  - **GI for New Homeowners**
    - Provides an introduction to green yard care and residential GI to participants in Home HeadQuarters' (HHQ) home ownership program.
  - **Community Workshop**
    - Includes hands-on training for design and implementation of residential GI. Residential GI projects will be installed or maintained during each workshop through assistance by workshop participants.

# Save the Rain Programs

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- Workshops

- GI for Youth

- Participants will use and develop games, skits, role-plays, and hands-on opportunities to increase awareness about GI and instill an appreciation for the role young people play in reducing pollution.

- GI and Art for Children

- combine crafts and hands-on activities to teach elementary and middle school age children about different kinds of GI: green roof birdhouse, painting a rain barrel, etc..

# Save the Rain Programs

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- **Workshops**
  - **Rain Barrel**
    - Participants at the workshops will learn proper installation techniques, maintenance and the role of rain barrels in reducing combined sewage overflows.
  - **Landscape Professionals**
    - includes a refresher on stormwater management principles, GI options, examples of local projects, and strategies for marketing GI to landscapers' customers.
  - **Pervious Products**
    - series of formal and hands-on workshops on the various pervious products available on the market will first provide an overview of the products, their uses and specifications, and installation guidelines.

# Save the Rain Programs

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- Design Charettes
  - This process will include community members in the visioning and decision-making process as plans are created to implement a neighborhood-planned and approved green street.
- Demonstration Projects
  - Rain gardens, green roofs, etc.

# Save the Rain Programs

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## Nature in the City

- 3<sup>rd</sup> Grade classes learning about GI throughout SCS. The lessons will be: Traveling Water Drop, Stream Exploration, and Clean Water Matters.

## ESF in the High School

- High school classrooms learning about GI throughout SCSD

## Exhibiting at Events

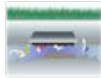
- Come to local events like Blue Rain ECOFest and more to learn about Saving the Rain!

## Water Word Find

**How to play:** The word can be found in the puzzle by looking up, down, backwards, and diagonally.

Q U B Z H U B E V R E S N O C  
 M T E S T V E C R U O S X G S  
 F R E C H A R G E E U M O D N  
 E Z W Q C M E N I R O L H C O  
 T T O Q U A L I T Y X L M Y W  
 U C D R I N K T P M U P Z B T  
 L T P S W I M I C H S E R F B  
 L M R I X P T O S E W E R Q I  
 O E K E V A P O R A T E G P M  
 P K D J A G Z F M G C O X I T  
 C A R F Y T I T N A U Q R O R  
 K L I Z K L M I R L R U I P E  
 Q W V Q T F R E U Z W L X E T  
 B P E E M P M D N I E U J E A  
 O T R B S E E S A T R A I N W

- |           |          |          |           |
|-----------|----------|----------|-----------|
| Chlorine  | Lake     | Rain     | Spring    |
| Conserve  | Pollute  | Recharge | Swim      |
| Drink     | Protect  | River    | Test      |
| Evaporate | Pump     | Sewer    | Toilet    |
| Filter    | Quality  | Snow     | Treatment |
| Fresh     | Quantity | Source   | Water     |



Don't put trash down the drain!



Remember to remind Mom and Dad that the water from your house ends up in everyone's lake!

## How to Prevent Water & Storm Sewer Pollution

### Stormwater Pollution



#### What is Stormwater?

Stormwater is water from rain or melting snow that does not soak into ground. It flows from rooftops, over paved areas, bare soil, and steep terrain. As it flows, stormwater runoff collects and transports soil, animal waste, salt, pesticides, herbicides, oil and grease, debris and other potential pollutants.

#### What is the Problem?

Rain and snowmelt wash pollutants from streets, construction sites, and land into storm sewers and ditches. Eventually, the storm sewers and ditches empty into polluted stormwater directly into streams and rivers with no treatment. This is known as stormwater pollution.

Polluted stormwater degrades our lakes, rivers, wetlands and other waterways. Nutrients such as phosphorus and nitrogen also cause the overgrowth of algae resulting in oxygen depletion in waterways. Toxic substances from motor vehicles, and careless application of pesticides and fertilizers from residential lawn care can get to fish and other aquatic life. Bacteria from animal wastes and improper connections to storm sewer systems can make lakes and waterways unsafe for walking, swimming and fish consumption. Erosion soil is a pollutant as well. It clouds the waterway and interferes with the habitat of fish and plant life.

#### Best Management Practices

- Cover and contain topsoil and mulch during construction.
- Plant rain gardens of native drought- and pest-resistant plants to collect and filter rainwater.
- Install pervious pavement and gravel driveways to reduce stormwater runoff.
- Do not drain swimming pools into storm drains or road ditches.
- Install vegetative buffers along streams and drainage pathways.
- Compost or mulch leaves and yard debris rather than taking to dumps.
- Direct downspouts away from driveways or storm drains or install rain barrels to collect roof runoff.
- Maintain septic systems to prevent failure and protect nearby water.
- Sweep up litter and debris from driveways and parking lots rather than leaving debris in storm drains.
- Plant vegetated filter areas or swales to trap pollutants along streams and driveways.
- Inspect and maintain sediment and erosion control measures during soil disturbing activities.
- Reduce amount of paved surfaces.
- Tackle insect and rodenticide empty pesticide and fertilizer containers.
- Use proper spray notification signage and comply with neighbor notification regulations.
- Comply with NYSD Department of Environmental Conservation pesticide application regulations.
- Use Integrated Pest Management (IPM) to avoid runoff or leaching from excess chemical applications.
- Avoid using chemicals near waterways or storm drains.
- Dispose of unused or excess pesticides in accordance with NYS DEC and US EPA regulations.
- Clean up spills immediately and properly dispose of cleanup materials.
- Fill tanks on a gravel surface, away from storm drains, sewers or ditches.
- Avoid spraying in windy conditions or when rain is in the forecast.
- Provide spill containment at storage facilities and store chemicals away from floor drains.

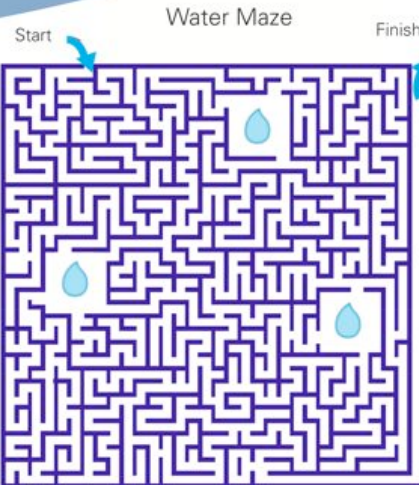
# Brochures, activity books, bookmarks, and a board game:

## “Raindrop Run”

Only Rain in the Drain

Prevent your rainwater pollution out of Onondaga Lake, Cayuga Lake, and Seneca Lake? Try these puzzles and look for hints along the way!

What will you pledge to do to help clean up our creek and lake?



Always pick up your pet's waste!



Never wash your car on pavement!



Check the weather and don't fertilize the lawn before it rains!

## Residential Rain Gardens



Save the Rain

Everything you need to know to build a rain garden

Make sure to pick up your dog's waste!

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It's Your Doodie!

Dog waste can contaminate our lake, our creek, and our streams.

Save the Rain

Onondaga County  
www.savetherain.us



# Save The Rain Clean The Lake

## Every drop counts. We can all make a difference.

Over 38 inches of rain falls in Central New York each year.

Pollution in Onondaga Lake affects our whole community.  
A cleaner lake means a cleaner future for us all.

Onondaga County is leading efforts with the development of green infrastructure and environmentally friendly solutions. Reduction of stormwater run-off will help keep Onondaga Lake clean.

Every drop counts. We can all make a difference. And you can help!

Joanne M. Mahoney  
County Executive

# Save the Rain



Onondaga County

To find out what your home or business can do to help visit: [www.savetherain.us](http://www.savetherain.us)

## Save The Rain New Look

Save the Rain 



## Education & Outreach Partners:

- Environmental Finance Center
- SUNY ESF
- Onondaga Environmental Institute



# Our many project partners include...

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**Environmental  
Finance  
Center**  
*Syracuse University*



**Baltimore Woods  
Nature Center**  
*Nature in your hands*



State University of New York  
College of Environmental Science and Forestry



*The Partnership for  
Onondaga Creek*

[www.onondagacreek.org](http://www.onondagacreek.org)



Onondaga  
Environmental  
Institute

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[kdodson@syracusecoe.org](mailto:kdodson@syracusecoe.org)