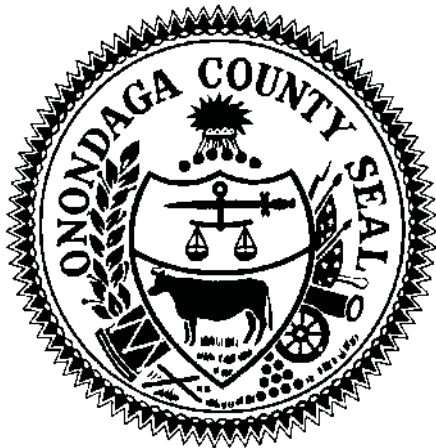


Save the Rain Program Overview

Joanne M. Mahoney, County Executive



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

Save the Rain

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

Agenda

1. ACJ: Brief Program Update (1998-2008)
 - i. Metropolitan Syracuse Treatment Plant (Metro)
 - ii. Combined Sewer Overflow (CSO) Abatement
2. Fourth Stipulation to the ACJ 2009-2018: "Save the Rain"
 - i. Save the Rain Program Goals
 - ii. Elements and Schedule
3. Green Infrastructure Projects Completed/Pending
4. Next Steps Towards Continued Compliance
5. Education and Outreach

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)
- 1st ACJ amendment May 1998
- 2006 ACJ Amended to include consolidation of ammonia and phosphorus treatment and Harbor Brook conveyances and RTF
- 3rd 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 Wastewater Treatment Plant

ACJ Related Improvements



Metropolitan Syracuse Treatment Plant

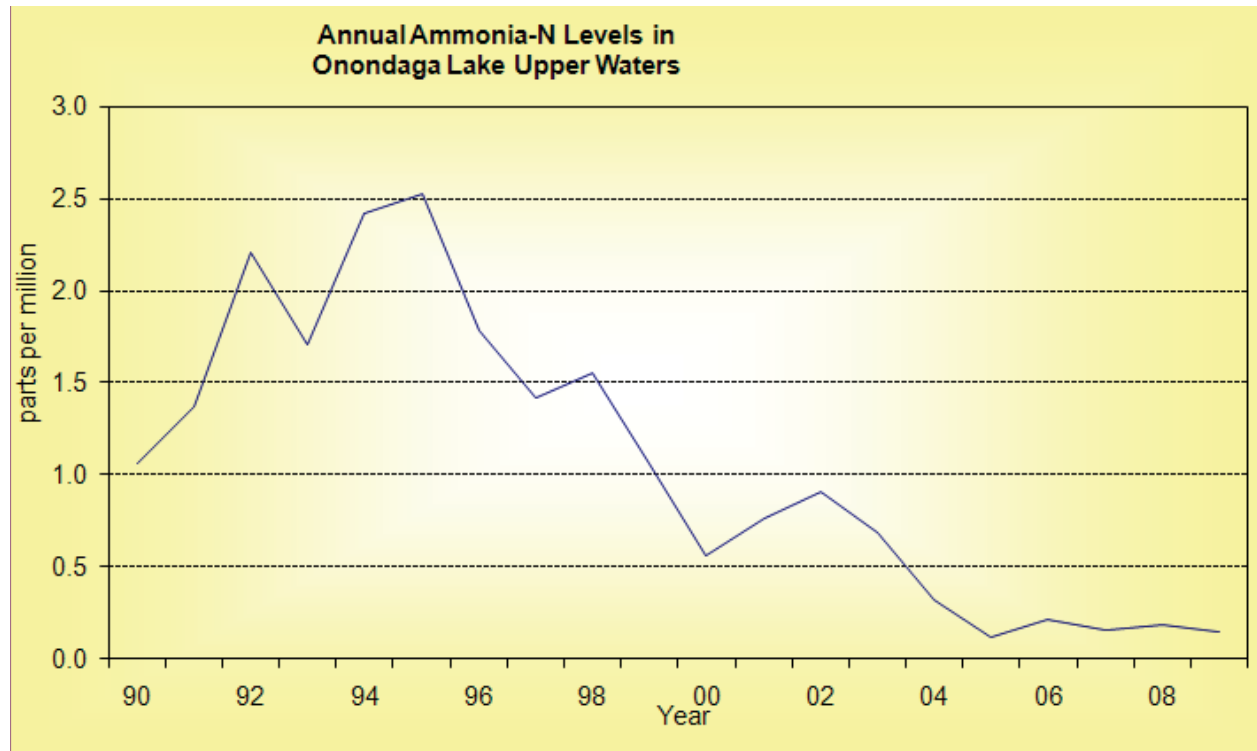
- Largest Biological Aerated Filter Process in US
- First large scale ballasted flocculation process for phosphorus removal in North East
- Project modified to two phases to save time and money; built on Brownfield site
- Meeting All Permit Requirements
- Upgrades Cost - \$135,000,000





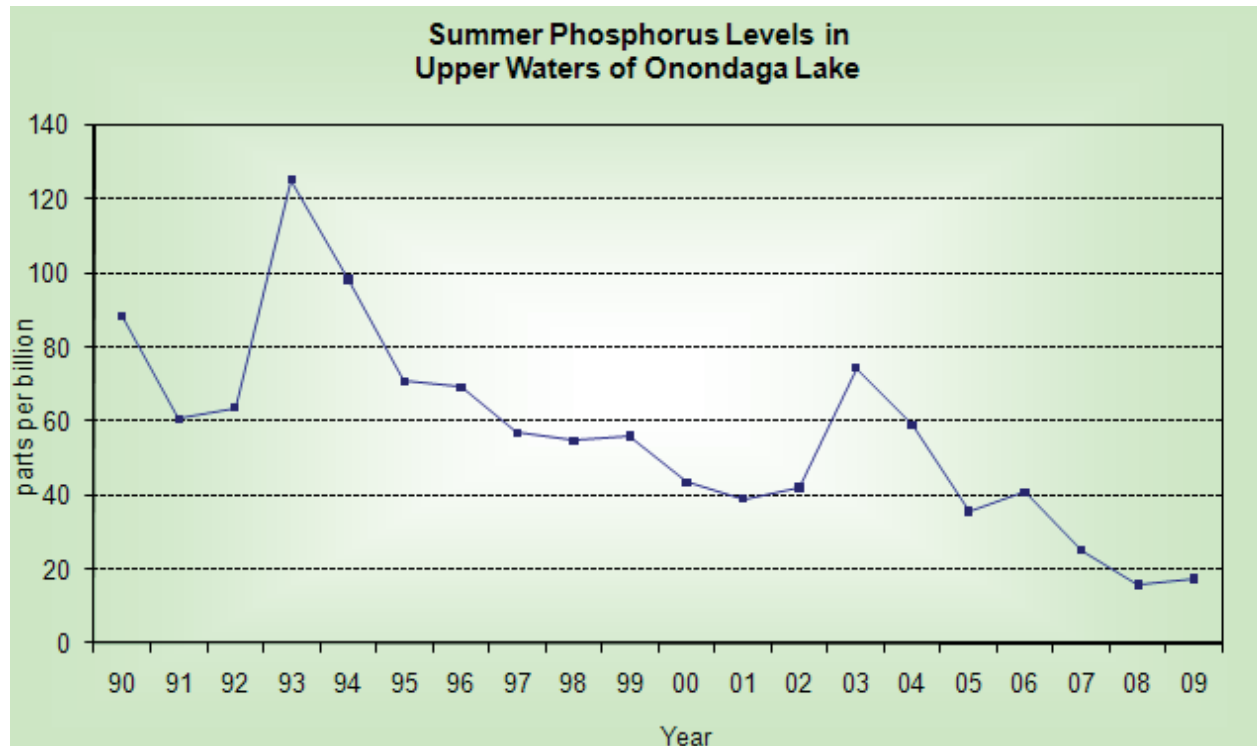
Exterior of New Operations Building

Water Quality Improvements Ammonia



Ammonia loadings to Onondaga Lake from METRO have decreased from over 8,000 pounds per day to less than 50 pounds per day

Water Quality Improvements Phosphorus



Phosphorus discharge from METRO to Onondaga Lake has decreased from over 300 pounds per day to approximately 50 pounds per day

Combined Sewer Overflow Abatement

ACJ Compliance 1998-2008



CSO Abatement Accomplishments

1/21/11
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- Developed and Verified System Model (SWMM)
- Separated and closed 12 CSO's
- Constructed 4 Floatables Control Facilities (HB, Franklin, Teall, Maltbie)
- Completed 2 Regional Treatment Facilities (Midland, Hiawatha)
- Completed 1 storage facility (Erie Blvd)
- Completed Clinton Conveyances



CSO 020 and 021



Sewer Separation

Floatables Control

1/21/11
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Floatables Control Access Building in Parking Lot



Underground floatables collection chamber

Floatables Control (continued)

1/21/11
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Trash collection skimmer vessel removes floatables from Inner Harbor



Midland Ave RTF

CSO
Storage,
Treatment
and
Conveyance
Project

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

5.5 Million Gallons of storage (sub-surface)

Swirl Concentrators



Captures CSOs 039, 041, 042, 043, 044

Midland Regional Treatment Facility under construction



Conveyance project under construction through south side neighborhood causing significant disruption



Large diameter conveyance pipeline dwarfs front end loader and operator

Midland Performance (2009 -10)

1/21/11
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Flow to Facility	228.8 MG
Treated/Creek Discharge	123.2 MG
METRO Treatment	99.6 MG
Bypassed	6 MG

Save the Rain

4th Stipulation to Amended Consent Judgment 2009
Program Goals, Elements, Schedule



Fourth Stipulation to the ACJ

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- Agreed to by all parties (State, ASLF, County)
- Authorized use of Gray and Green infrastructure
- Requires Storage Facilities in place of RTFs
- Includes time extension for Construction and Metro phosphorus effluent limit
- Balanced program provides additional water quality and community benefits

Save the Rain Program: 2009-2018

1/21/11
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Regulatory Goals

- Capture and Treat 95% of the Annual CSO Volume via Gray & Green Infrastructure
- Achieve water quality standards in tributaries and lake

Community Impacts/Goals

- Improve quality of life
- Promote Sustainability
- Ensure cost effectiveness in compliance with ACJ milestones

Major Milestones

- 89.5% capture/elimination by 12/31/2013
- 95% capture/elimination by 12/31/2018

Gray Infrastructure Program Summary

1/21/11
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Gray Projects

- Harbor Brook Interceptor (ARRA)
- Midland Conveyance (CSO 044)
- Clinton Storage Facility
- Harbor Brook Storage Facility and Conveyances
- Erie Boulevard Storage System (EBSS) Gate Chamber #3 Improvement
- Sewer separation projects

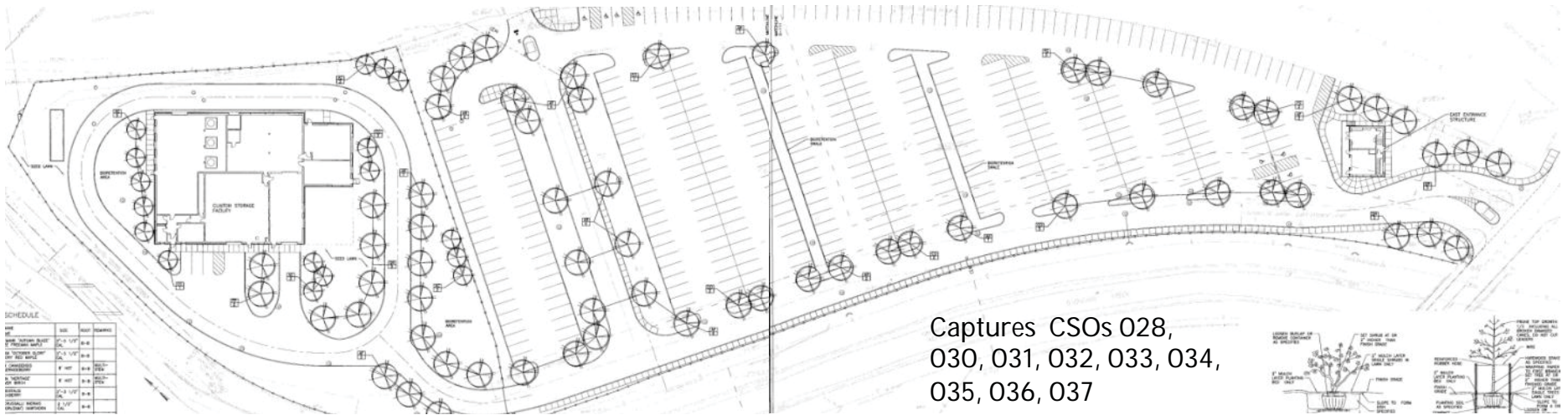
Facilities Planning

- Floatable Control
- Remaining CSO Facilities Plan

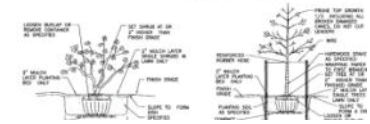


Clinton Storage Project

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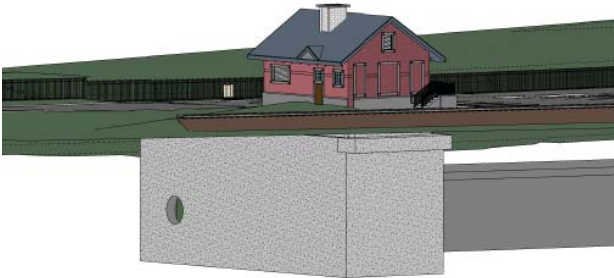


Captures CSOs 028, 030, 031, 032, 033, 034, 035, 036, 037



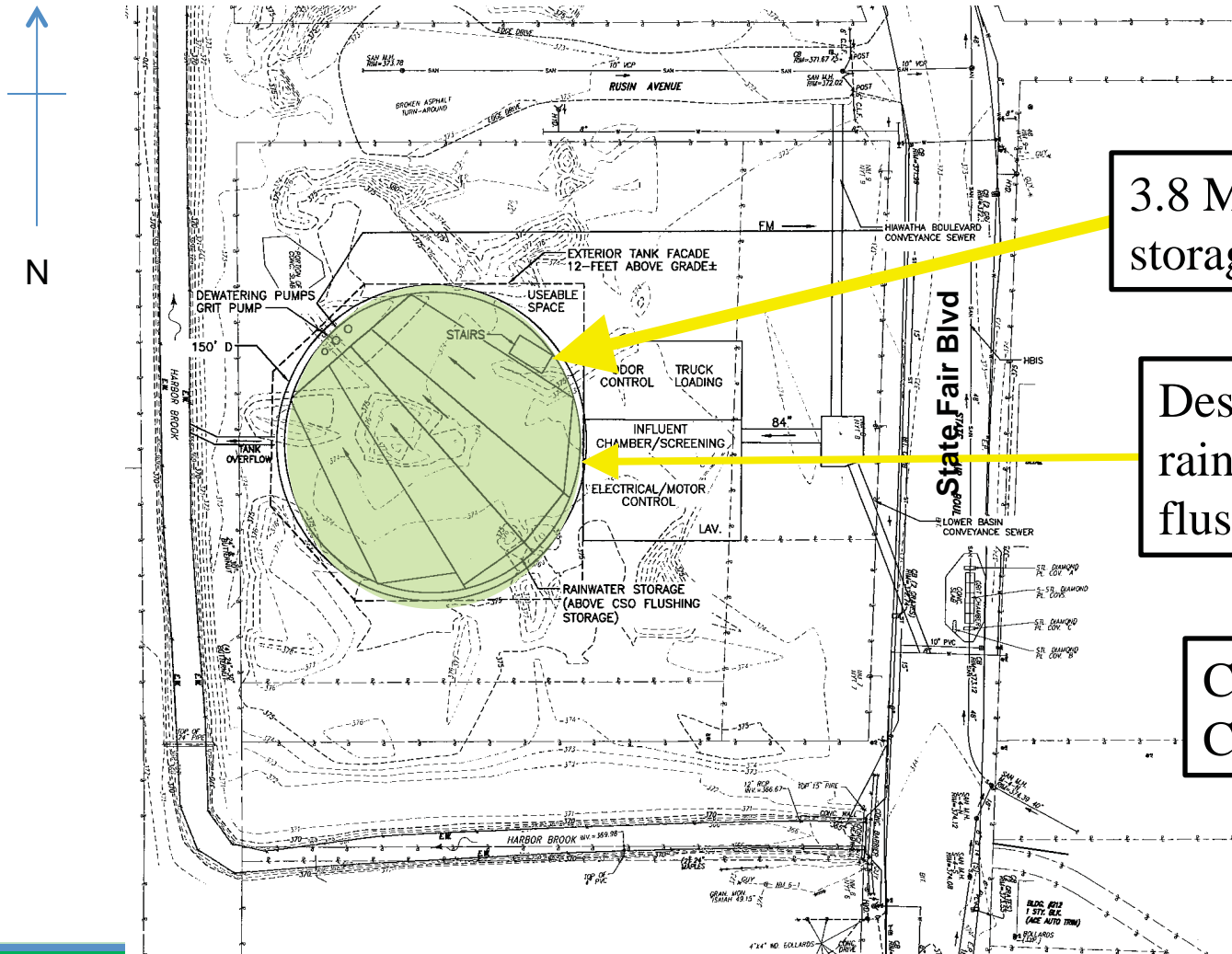
Designed to capture rain water for system flushing/cleaning

6 Million Gallons of storage (sub-surface)



Harbor Brook Storage Project

1/21/11
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3.8 Million Gallons of storage (sub-surface)

Designed to capture rain water for system flushing/cleaning

Captures CSO 003, 004, 063

Gray Projects Completed to Date

Total Investment: \$367 million

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1. Aeration System Upgrade
2. Odor Control - residual handling and clarifiers
3. Chemical Storage Building and Feed System
4. Digester and Lagoon Improvements
5. Phase II Plant Improvements
6. Ammonia Removal Pilot
7. Phosphorus Removal Pilot – Phase I
8. Digital System Upgrade
9. Ammonia Removal – BAF
10. Phosphorus Removal – HRFS
11. CSO Toxicity Evaluation Report
12. Erie Boulevard Storage System Upgrade
13. Franklin St. FCF
14. Harbor Brook FCF
15. Hiawatha RTF
16. Kirkpatrick St. Pump Station Upgrade
17. Maltbie St. FCF
18. Midland Phase I Pipeline
19. Newell St. Pilot Disinfection
20. Onondaga Creek FCF - Boat
21. Siphon Rehabilitation
22. Teall Brook FCF
23. West St. Sewer Separation (CSOs 057, 058, 059)
24. Water St. Sewer Separation (CSO 024)
25. Brighton Sewer Separation (CSOs 053, 054)
26. Ammonia Source Trackdown Program
27. Tallman/Onondaga Sewer Separation (CSOs 038, 040, 046a and 046b)
28. Midland Phase II (includes Regional Storage and Treatment Facility plus 1,000 ft. pipeline)
29. Phosphorus Removal Pilot – Phase II
30. Biosolids Handling (mechanical thickeners) Improvements – Metro
31. South Ave./Bissell St. Sewer Separation (CSOs 047 and 048)
43. Sewer Separation 050 – Parkway/Rockland
44. Clinton Conveyances Phase 1 – pipeline outside the Trolley Lot & Armory Square
45. Clinton Conveyances Phase 2A – pipeline behind the MOST under RR
46. Sewer Separation 051 – Colvin Avenue

Green Infrastructure Program Summary

1/21/11

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- 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



Green Street Concept Drawing
Edmonston, MD – Completed 2009

Green Infrastructure Technologies

1/21/11
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Impervious Area Type	Green Infrastructure Technologies
Flat Roof Buildings	Vegetated Roof
Parking Areas & Sidewalks	Porous Pavements, Bioretention
Roadways	Green Streets (Bioretention, Street Trees)
Residential Rooftops	Downspout Disconnection
	Rain Barrels & Cisterns
	Rain Gardens
County Facilities & Schools	Combination of the Above Technologies

Onondaga County Civic Strip

1/21/11
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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



Advantages of Revised Program

- Balanced approach: Gray & Green
- Improved water quality for tributaries and lake
- Gray:
 - Fixed capture benefit
 - Depreciates over time
- Green:
 - Appreciates over time
 - Ancillary environmental and community benefits
- Onondaga County at the forefront of GI Movement

- Philadelphia, PA
- Portland, OR
- Cincinnati, OH

Cities To Watch:

- **Syracuse, NY**
- New York, NY

- Milwaukee, WI
- Chicago, IL
- Kansas City, MO

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)



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.

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



Before

After



Pearl Street Parking Lot

1/21/11

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Parking Lot #3

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Porous Concrete
Captures over 700,000 gallons of stormwater annually

Rosamond Gifford Zoo

Primate Exhibit and Courtyard

1/21/11
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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)

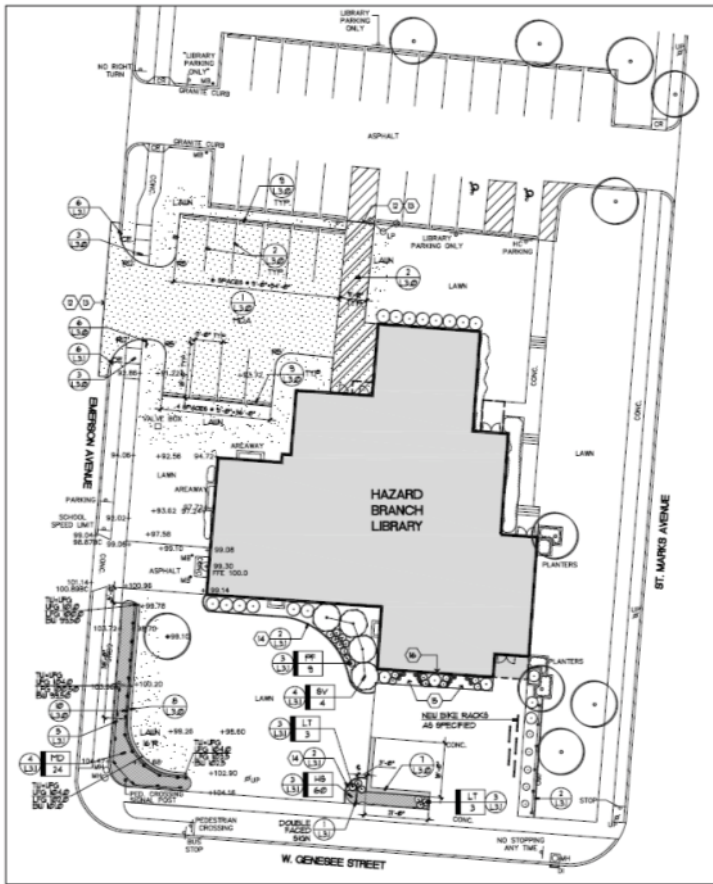
6,000 sq.ft.
Green Roof

Enhanced
Stormwater
Management

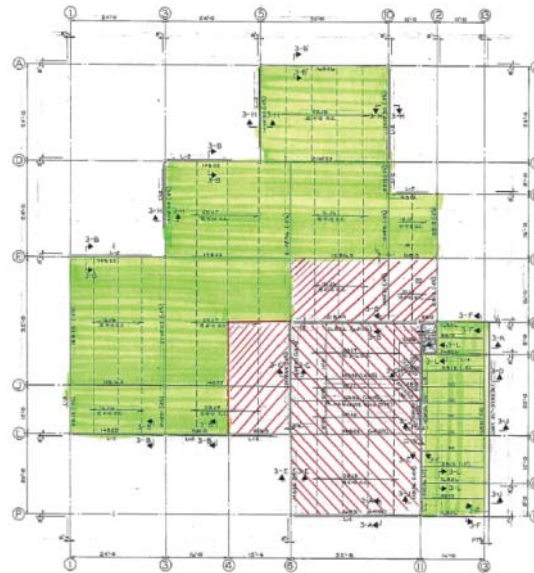


Green Roof at Hazard Branch Library: Roof Membrane 2010; Green Planting, Spring 2011

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LAYOUT PLAN

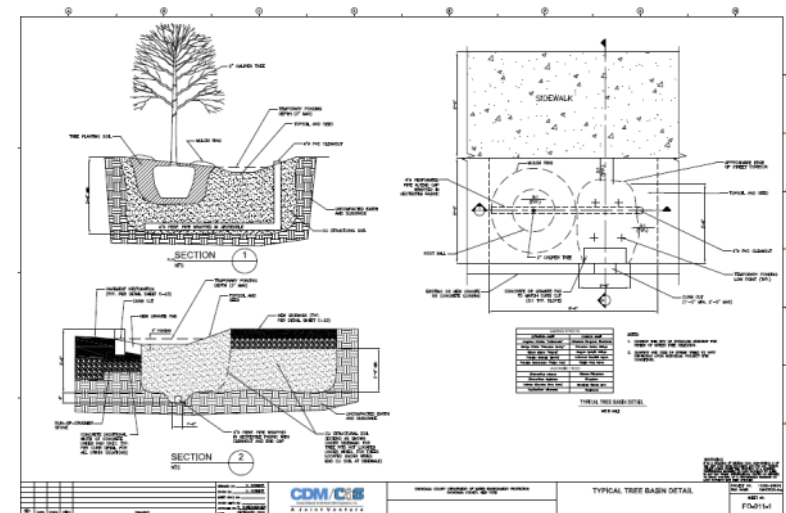


Green Roof at SUNY ESF

Enhanced Street Trees

1/21/11

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

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Green Infrastructure 2011 Signature Projects

Treatment Wetland and Restoration Project



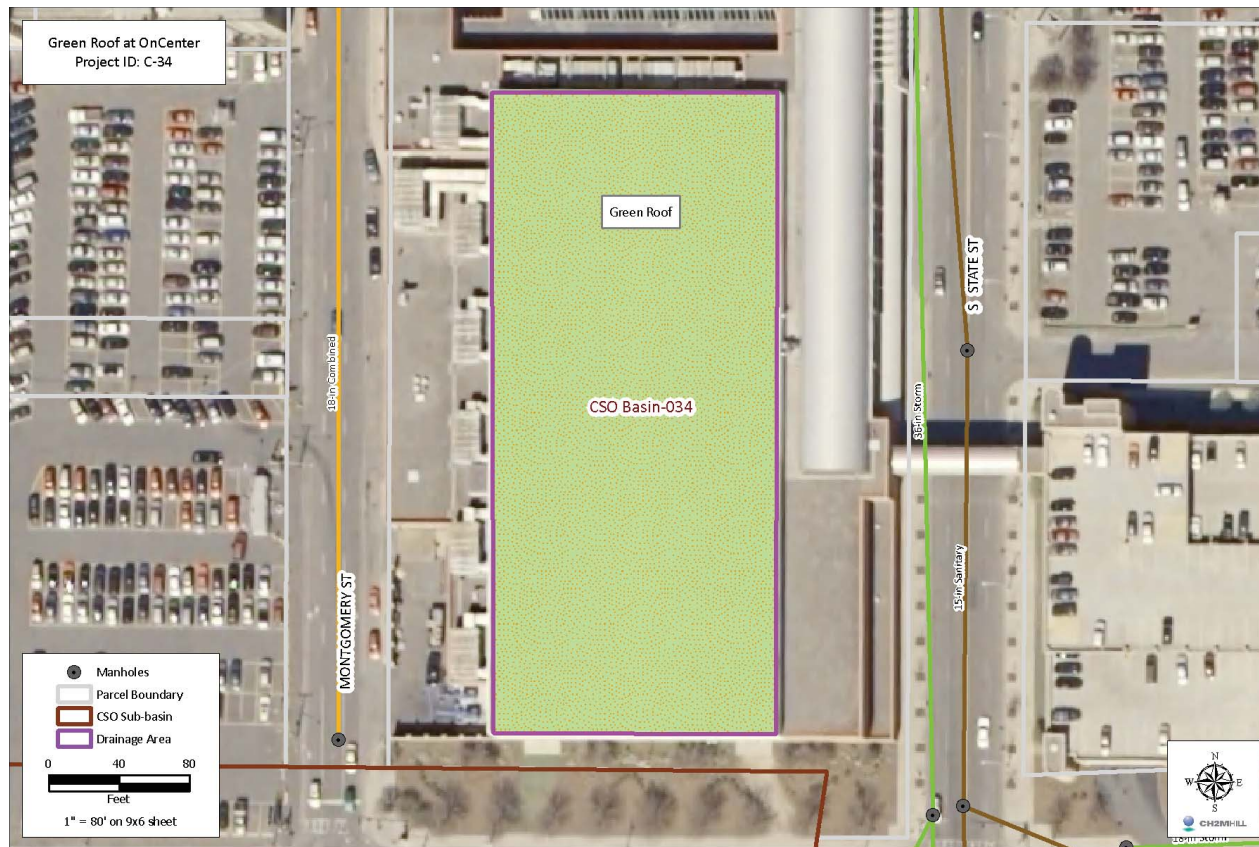
CSO 018

CSO 018
Constructed
Wetland

Harbor Brook

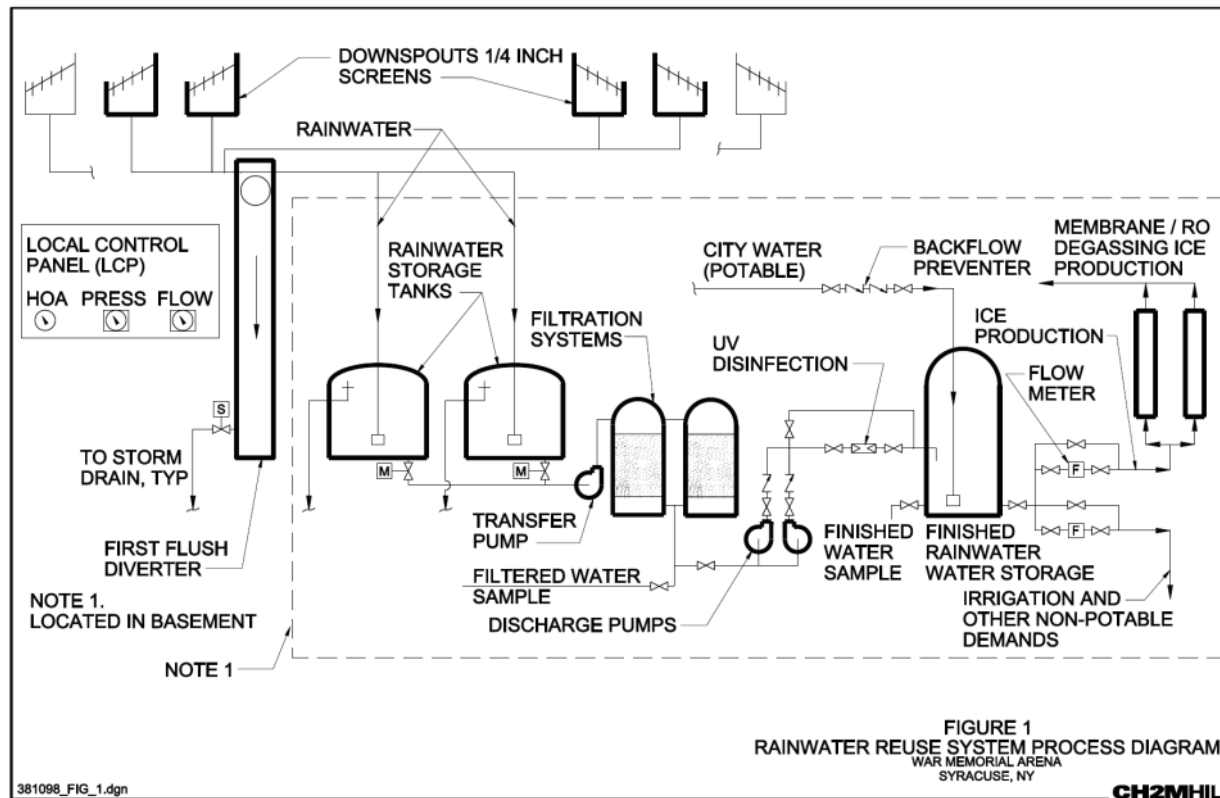
Green Infrastructure 2011 Signature Projects

OnCenter Convention Center Green Roof

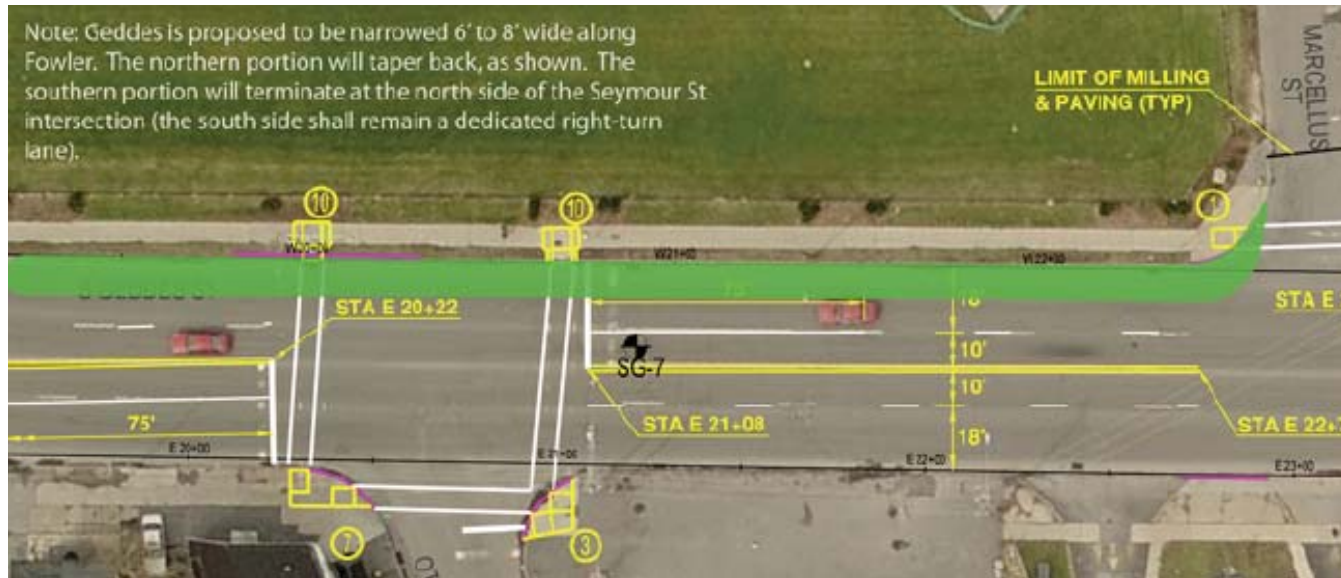


Green Infrastructure 2011 Signature Projects

Water Reuse at OnCenter War Memorial



Greening the Geddes Street Corridor



Note: Geddes is proposed to be narrowed 6' to 8' wide along Fowler. The northern portion will taper back, as shown. The southern portion will terminate at the north side of the Seymour St intersection (the south side shall remain a dedicated right-turn lane).

ACJ Program Summary & Next Steps

Project Planning for 2011 – 2018



Benefits of Save the Rain Strategy

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- Fewer Construction Impacts
- Higher Level of Public Acceptance
- More Sustainable
- Lower Life Cycle Cost
 - Energy Savings
 - Avoided Operations & Maintenance
 - Lower Staffing Needs



Gray/Green Project Schedule

1/21/11
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Completion	Project
12/31/2011	Harbor Brook Interceptor
12/31/2011	Midland CSO 044
12/31/2013	Clinton Storage
12/31/2013	Harbor Brook Storage
12/31/2018	Sewer Separation

2011: Complete 50 Green Projects

- Green Roof @ OnCenter
- Wetland Pilot @ Harbor Brook
- War Memorial Water Reuse
- Green Streets
- Green Improvement Fund

2018: Achieve Compliance with ACJ

Education & Outreach

Save the Rain



**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 drops 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

Save The Rain
New Look





Education & Outreach Partners:

- Environmental Finance Center
- SUNY ESF
- Onondaga Environmental Institute



Program Partners



ATLANTIC STATES LEGAL FOUNDATION, INC.



Thank You!

Questions?

Please Visit:

www.SaveTheRain.us



Save the Rain 

The logo for "Save the Rain" features a stylized green plant with two blue water droplets above it.