BRONX RIVER PARKWAY STORMWATER RETROFITTS

Stormwater retrofitting a site listed on the National Register of Historic Places

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# Major Drainage Basins

<table>
<thead>
<tr>
<th>NAME</th>
<th>SQ. MILES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Croton River</td>
<td>183</td>
</tr>
<tr>
<td>Pocantico and Saw Mill Rivers</td>
<td>67</td>
</tr>
<tr>
<td>Coastal LI Sound</td>
<td>65</td>
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<tr>
<td>Bronx River</td>
<td>48</td>
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<tr>
<td>Inland LI Sound</td>
<td>45</td>
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<tr>
<td>Peekskill and Haverstraw Bay</td>
<td>43</td>
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</tbody>
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[GIS Interactive Mapper]
Bronx River Parkway

Constructed in 1925
First public parkway
First County park
12.5 miles from Bronx to Kensico Dam
10 most northern miles listed on the National Register of Historic Places 1990
NYS Scenic Byway 1995
Commuter rail line
48 sq mi watershed, 14 municipalities
Bronx River and floodplain
Tributaries, lakes and ponds
The Bronx River in the 1890s -- an open sewer
Bronx River Parkway
Completed in 1925 – the nation’s first public parkway
Watershed Planning

The County has expertise in working with watershed municipalities to develop watershed plans with specific recommendations for action. This makes it easier to obtain grant funding for project implementation.
Begun 2003 by the USACE with NYCDEP and Westchester as partners, the study is currently inactive. Substudies (sediment loading, hydrologic and hydraulic modeling) will be useful for flood mitigation planning.
Stormwater Management Modeling Tool Prepared By HDR/HydroQual

Final Bronx River Watershed Report (09/30/10) at:
environment.westchestergov.com/images/stories/qrtly/7QBronxRivWatershedFinal10.pdf
County projects through the Soil and Water Conservation District

- **Carpenters Pond** (completed) ($950K)
  - Allows for pre-storm drawdown
- **Gravel Wetland** (completed) ($133K)
  - Provides extended detention
- **Popham Road** (completed) ($133K)
  - Streambank stabilization
- **County Center** (in-progress) ($550K)
  - Streambank stabilization
- **Six Rain Gardens, County Properties** (completed) ($60K)
  - Provides extended detention
- **Dickerman’s Pond** (completed) (500K)
  - Increased storage and infiltration
SWCD Projects – Crestwood Maintenance Facility

This rain garden and bioswale treats stormwater runoff from the Crestwood Maintenance Facility before it enters the Bronx River. Signs placed along the Bronx River pathway, which runs alongside the area, educate residents of the project.
This rain garden and bioswale treats stormwater runoff from the Crestwood Maintenance Facility before it enters the Bronx River.
SWCD Projects – Popham Road Stream Bank Stabilization
SWCD Projects – Gravel Wetland at Parkway Homes Road

Gravel wetland along Bronx River Parkway near Parkway Homes Road under construction. The gravel wetland will capture and store runoff in the large gravel beds and the surface detention components of the system.
Bronx River Parkway
Gravel Wetland

Stormwater enters the first cell of the gravel wetland (1). Water is treated in the cell and sent to the second cell via perforated pipes below grade in the gravel medium (2). Overflow is transported to the second cell through a surface pipe (3).
The second cell of the gravel wetland provides additional storage and treatment, reducing runoff volume and releasing water slowly over time. The pipe to the left (1) discharges surface water stored in the basin, and the emergency spillway is seen along the rear berm (2). Also visible are inspection ports for the subsurface perforated pipes (3).
Bronx River Parkway
Gravel Wetland

Gravel wetland along Bronx River Parkway at Parkway Homes Road completed. The gravel wetland appears as a landform and will be illegible once the grass grows.
SWCD Projects – Scout Field Phase I

Stream bank stabilization and stormwater wetland at Scout Field detains and treats stormwater runoff before it enters the Bronx River.
Stream bank stabilization and stormwater wetland at Scout Field detains and treats stormwater runoff before it enters the Bronx River.
County Capital Projects

• Bronx River Parkway (completed)
  • Stormwater swales and wetlands provide extended detention and encourage infiltration
• County Center Stormwater Park (completed)
  • Porous pavement, bioswales, subsurface storage and stormwater wetlands all provide extended detention and encourage infiltration
Bronx River Parkway
Center Median Bioswale

Bioswale in center median treats runoff from the Bronx River Parkway holds water from smaller storms and treats it.
Bronx River Parkway
Stormwater Wetlands

Stormwater wetlands such as these south of Fisher Lane treat runoff from the Bronx River Parkway hold water from smaller storms and provide treat it using vegetation and infiltration. Larger storms overflow into the storm drain system.
Bronx River Parkway
Roadside Swales and Wetlands
WESTCHESTER COUNTY CENTER STORMWATER PARK

A Variety of Stormwater Best Management Practices (BMPs) for Study and Demonstration
County Center Stormwater Park

PRIOR PARKING LOT LAYOUT:

- Large central lot
- No dedicated pedestrian circulation
- Large gravel lot in southern portion of site
- Limited queue space into site
- Disjointed pedestrian pathway through site
County Center Stormwater Park

REDESIGN OF PARKING LOT:

• Improved vehicular layout
• Dedicated pedestrian paths and crosswalks
• Improved Bronx River pathway
• Improved landscaping
• New lighting
• New control points and gatehouses
• Long entrance queue
County Center Stormwater Park

**Stormwater BMP Characteristics**

- Underground detention and infiltration
- Utilizes surface detention and vegetation for treatment
- Restoration of degraded streambank and buffer
County Center Stormwater Park

STORMWATER BEST MANAGEMENT PRACTICES:

1. POROUS PAVEMENT
2. UNDERGROUND DETENTION
3. BIOSWALES
4. RAIN GARDENS
5. STORMWATER WETLANDS
6. STREAMBANK RESTORATION
County Center Stormwater Park

POROUS PAVEMENT
County Center Stormwater Park

UNDERGROUND DETENTION AND INFILTRATION
County Center Stormwater Park

UNDERGROUND DETENTION AND INFILTRATION
County Center Stormwater Park

BIOSWALES/FILTRATION ISLANDS
County Center Stormwater Park

RAIN GARDEN
County Center Stormwater Park

STORMWATER WETLANDS AND SWALES
County Center Stormwater Park

STORMWATER WETLANDS AND SWALES
County Center Stormwater Park

STREAMBANK AND HABITAT RESTORATION
Stream Bank Erosion

Eroded stream bank along the Bronx River south of the County Center.
Stream Bank Stabilization

Stabilized stream edge along the Bronx River at the County Center (under construction).
Stream Bank Stabilization

Stabilized stream edge along the Bronx River at the County Center.
Wetland Restoration

Restored wetland along the eastern edge of the Bronx River.
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