Harbor Brook Daylighting Project, Meriden, Connecticut

Overview

Central Meriden, located in New Haven County, Connecticut, is continuously devastated by flooding. Centuries of urbanization and loss of wetland habitats have led to these ruinous disturbances. Local resident taxes, along with resources provided by the Environmental Protection Agency, furnished the rehabilitation project of the main "Hub" of Meriden. Milone & MacBroom, Inc. were called upon to analyze and develop a plan for reform. Economic development and reduction of flooding hazards were achieved by constructing a program to daylight Harbor Brook, a waterway that had been covered by industrialization. Development of the water budget required an analysis of the characteristics of the large scale watershed, the entire corridor, and the channel itself, segment by segment. Topographical data and models of hydrology were used to develop runoff hydrographs and route them through the watershed. Businesses in the Hub were relocated and 1700 linear feet of concrete culverts over 30 feet wide were demolished, excavated, and removed (Milone & MacBroom, Inc, n.d.). The elimination and reconstruction involved manufacturing a Town Green to be used as a watershed for impending storms, as well as a gathering place for public events.

Quick Facts

Project Location:
Meriden, CT, USA, 41.5381535, -72.80704349999996

Geographic Region:
North America

Country or Territory:
United States of America

Biome:
Freshwater

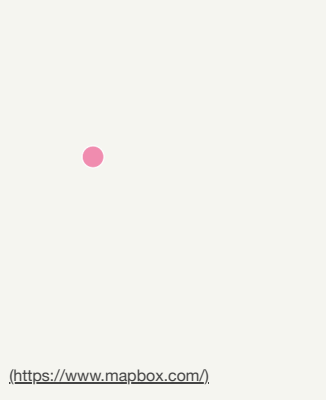
Ecosystem:
Freshwater Wetlands

Project Lead:
The City of Meriden and engineering firm Milone and MacBroom led the design team

Organization Type:
Other

Project Partners:
watershed groups (QRWA), non-profit groups, the local fire department, agencies that grant permits and money grants, the city itself, local business and local citizens that live within the 100-year flood zone, government agencies for environmental protection, and much more. USDA Soil Conservation Commission.

Location



TIMEFRAME

Project Stage:
Completed

Start Date:
1970-01

End Date:
2016-06

DEFINING THE PROBLEM

Primary Causes of Degradation

Contamination (biological, chemical, physical or radiological), Dams & Hydrology, Fire & Weather Events, Fragmentation

PLANNING AND DESIGN

Project Goals

The major goal of this daylighting project was to re-naturalize the river that runs through the
city. In the past, the river was subject to flooding which caused damage to surrounding business. The goal of daylighting the river was to create an area to store flood water to help protect the 50,000 people who occupy the downtown area. The goal of fish repopulating the waters along with the ability for recreation is important to the city and its citizens. This was made to look attractive as well, increasing surrounding property value, and encouraging people to use the area.

Monitoring

The project does not have a monitoring plan.

PROJECT ACTIVITIES

PROJECT OUTCOMES

Ecological Outcomes Achieved

Eliminate existing threats to the ecosystem:
The biggest threat is flooding of Harbor Brook Park after rainstorms. With these storms can come hurricanes and high winds. Because of the bowl shape of the land, this was a high flood area, and water often engulfed the whole park and surrounding streets. This area is a watershed zone, so

water will always be present. Factories historically dumped heavy metals and other pollutants into the river before it was covered by a shopping mall, which raised the flood zone and made flooding worse for the surrounding area. The shopping mall was eventually removed for remediation. The factories were either removed, or re-located. This was relatively effective, although flood waters are still able to rise to the streets during big storms. Overall, the nearby businesses causing pollution, as well as other buildings, and the mall were moved. This was effective based on the goals of the remediation project. Before this area was populated heavily, it would have been a natural wetland area. Every year there would be a normal expectancy of the level of flood waters across that area. Once the impairment of the city happened, the land was built up, and created a Brooke type waterway that was dug deeper, which would fill the Brooke during floods. This would push the water level higher during big floods. This loss of land was detrimental due to the need for open wetland space, not a congested city. The threat to the wetlands was the loss of wetland area that allowed the water to disburse more naturally. The park restoration was more effective at holding this bigger sum of water, because of the big bowl shape that was created.

Reinstate appropriate physical conditions",:
The brownfield created by the factories was properly removed. The landscape was then re-shaped with the exposed stream running through the middle. This better collects flood water, and prevents clogging of the old culverts. This was a large step in the remediation process, but still didn't re-create the wetland habitat that was previously there.

Achieve a desirable species composition:
Native species of plants are being planted along the river to create a riparian zone. Recovery of fish populations was also a goal of this project. The effectiveness of the project in achieving the desired species composition is limited by the amount of space there is in the park, as well as how often landscapers and ground crews limit growth.

Reinstate structural diversity:
Engineers planned an uneven riverbed to replicate a natural setting. Also, downed logs were added to produce quality habitat for aquatic species. Rocks were also strategically placed in the river to replicate the kind of water flow that occurs in a natural environment.

Recover ecosystem functionality:
The area is already showing signs of species repopulating the area. These systems are able to recover easily due to less risk of flooding which would previously disturbed the landscape. Less pollution also enters the river as a result moving or removing buildings/brownfields. However, this does not replicate the original wetland ecosystem that once existed. Ongoing monitoring will still occur for the project. Water quality will be monitored, along with the species that continue to occupy the area. The flooding prevention plan is something that will continue to be ongoing to make sure areas of the city aren't getting flooded. This will inevitably benefit ecosystem functionality by reducing external degradation factors caused by humans, and allowing plants and animals a more clean/natural habitat.

Reestablish external exchanges with the surrounding landscape:
The plan for the future is to daylight more of the river further upstream and take down some of the old rundown buildings. Once the buildings are gone the daylighting project should continue to the parts of the river that are still underground.

Socio-Economic & Community Outcomes Achieved

KEY LESSONS LEARNED +

LONG-TERM MANAGEMENT −

FUNDING −

LEARN MORE −

CONTACTS −

Primary Contact

Organizational Contact