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Nature-Based Stormwater Capture and Reuse

Examples from the United States, China, Singapore and Europe

by Alexandra Feldman

Community Conservation Solutions is pleased to present these examples of successful stormwater capture and reuse projects that integrate natural habitat and open space, serving urban communities in the United States and around the world. To learn more about CCS' work to advance nature-based stormwater and urban runoff re-use projects, click here .

Qunli Stormwater Wetlands

Harbin City, Heilongjiang Province, China

Size: 85 acre wetland and stormwater capture park

Methods: Filters and infiltrates stormwater collected from urban area through a constructed wetland park

Amenities: Restored wetland habitat, walking trails, amphitheater, overlooks and interpretive signage

Significance: Recharges groundwater, restores habitat, provides green open space in a dense urban area, recreation and education

Qunli Stormwater Wetlands, Harbin City, China
85 acres

Singapore: NEWater and ABC Waters

Integrated throughout the island of Singapore

Size: 278 square miles, 4,350 miles of drains, 620 miles of canals, serving 5.6 million people

Methods: Captures and infiltrates stormwater through rehabilitated wetlands, bioswales, rain gardens, infiltration trenches

Significance: Reuses stormwater, which constitutes 30% of Singapore's water use. Singapore plans to triple current capacity by 2060

Funding: $600 million yearly, funded by Singapore's National Water Agency though increased water prices and a water conservation tax

NEWater & ABC Waters, Singapore
278 square miles

Room for the River

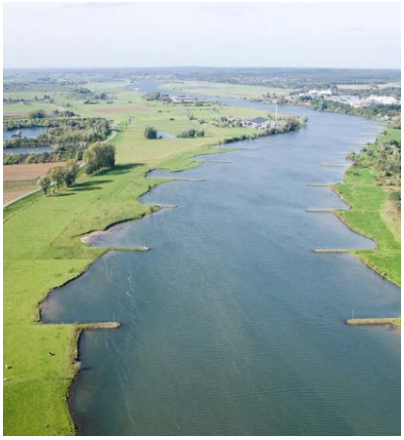
Rhine-Meuse-Scheldt delta, Netherlands

Size: Over 9,700 square miles along the Rhine, Meuse, Scheldt Rivers

Methods: Restores natural floodplains and removes manmade barriers

Significance: The Dutch government estimates 4 million people will be safer from floods, solving a large problem for this low-lying country

Funding: $2.7 billion, funded by the Dutch government



Room for the River, Rhine River, Netherlands
Over 9,7000 square miles

Hammarby Lake City

Hammarby Sjöstad Stockholm, Sweden

Size: 494 acre system of green infrastructure integrated in a city of 20,000 people

Methods: Directs runoff from roads to treatment pools and allows rainwater to infiltrate directly or through canals; Green roofs absorb rainwater

Significance: Redesigns a former industrial district with green infrastructure principles as part of Sweden's efforts to increase green urban spaces

Hammarby Lake City, Stockholm, Sweden
494 acres

Duisburg-Nord Landscape Park

Duisburg, Germany

Size: 568 acres in the Emscher River watershed

Methods: Purifies runoff through phytoremediation

Amenities: Walking and biking trails, seating and gardens

Significance: Reclaims an abandoned factory space to filter and treat runoff flowing into the Emscher River

Duisburg-Nord, Duisburg, Germany
568 acres

Staten Island Bluebelt

Staten Island, New York, U.S.

Size: 400 acres and 11 miles of stream corridor collect runoff from 16 watersheds totaling 10,000 acres. Serves population of nearly 500,000

Methods: Filters and infiltrates runoff through natural drainage corridors, recharges groundwater

Significance:

- Creates a replicable solution for flooding in southeastern Staten Island
- Provides public access to natural habitat
- Benefits native species like the American Eel

Staten Island Bluebelt, Staten Island, NY
400 acres, 11 miles of streams

Gene Green Beltway 8 Park

Houston, Texas, U.S.

Size: 230 acres

Methods:

- Wetland plantings, native prairie grass, and streamside native plants filter stormwater
- Recycled concrete riprap berms and detention basin prevent erosion
- Bioswales filter surface runoff water

Amenities: Walking trails, splash park, dog park, barbeque and picnic area and athletic courts

Significance: Uses native habitat to recycle stormwater in this arid climate

Gene Green Beltway, Houston, Texas
230 acres

Alewife Stormwater Wetland

Cambridge, Massachusetts, U.S.

Size: 3.5 acre wetland, 420 acre catchment area

Methods: Separates stormwater runoff from sewer water and directs the flow of stormwater

Water: Reduces sewer overflow by 43.6 million gallons annually, 84% of total flow

Amenities: Walking trails, native species, amphitheater, scenic overlooks and interpretive signage

Significance: Restores native habitat in a dense urban area

Alewife Stormwater Wetland, Cambridge, MA
3.5 acres

Greenseams

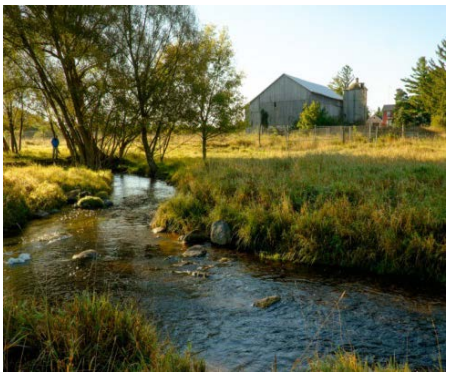
Milwaukee, Wisconsin, U.S.

Size: 3,400 acres, serves Milwaukee with a population of over 590,000

Methods: Restores native wetlands

Significance:

- Over 100,000 trees planted
- Protects native habitat from urban development
- Allows natural recharge of ground water



Greenseams, Milwaukee, WI
3,400 acres

Public School 261

Brooklyn, New York, U.S.

Size: 0.5 acre school that serves 786 students

Water: Intercepts 500,000 gallons a year

Methods: Captures stormwater in rain gardens, green roof, and rain barrels; allows it to infiltrate through permeable pavement

Significance: Constitutes the first of forty similar schoolyard renovations in New York City

Funding:

- $1 million per renovated schoolyard
- Funded by New York City Department of Environmental Protection, New York City Department of Education, and the Trust for Public Land

Public School 261, Brooklyn, NY
0.5 acres

Elmwood Park

Omaha, Nebraska, U.S.

Size: 30 acres, serving Omaha with a population of over 446,000

Methods: Directs runoff from existing stormwater system; Captures and cleans stormwater in dry detention ponds, bioretention gardens, grade-control slotted weirs, deep-rooted native plants

Amenities: Trails, exercise equipment, pavilion and playground

Significance: Saved Omaha $550,000 in stormwater management

Elmwood Park, Omaha NE
30 acres

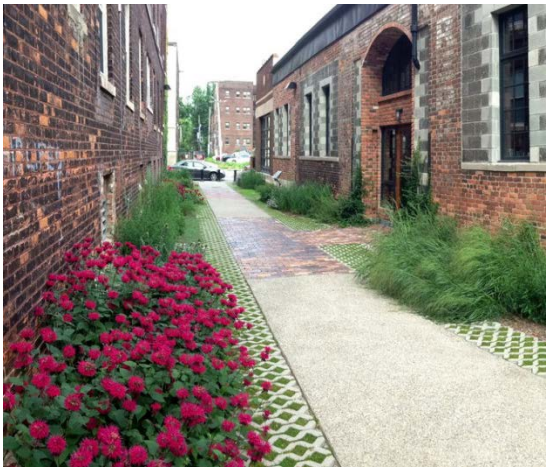
Green Alley System

Chicago, Illinois, U.S.

Size: 1,900 miles of alleyway impacted by this initiative; over 100 Green Alleys have been installed

Methods: Allows urban runoff to recharge groundwater through permeable pavement and adjacent natural rain gardens

Funding: The pilot project, which installed four Green Alleys in five locations, cost $900,000



Green Alley Systems, Chicago IL
1,900 miles of alleyways