



GREEN STREETS | GREEN JOBS | GREEN TOWNS INITIATIVE

The Green Streets, Green Jobs, Green Towns Partnership (G3) aims to stimulate the green jobs market and enable families to work where they live and play. Small to mid-sized communities can boost their local economies and protect water resources through the use of watershed planning, design and construction of stormwater best management practices.

Delaware



BETHEL, DELAWARE

A small town plans a comprehensive greening plan including several environmental protection methods

The Town of Bethel, located on the banks of the Broad Creek, has an important historic connection to the Chesapeake Bay, as a center of ship building and repairs. This tiny town of less than 200 residents is only 0.4 square miles large, and was added to the National Register of Historic Places in 1975.

The town needs stormwater infrastructure and wants to start making headway in doing their part to reduce their nonpoint source contributions. Land uses within the town are mainly limited to residential and agricultural. There is a tiny amount of commercial space, mainly limited to a nursery/greenhouse, and a small local convenience store. This project would provide an opportunity to showcase the town's efforts to green its streetscapes, educating both residents and visitors.

The project features several bioretention areas for enhancement of

stormwater quality through capture, filtering, retention and nutrient uptake, and recharge. Within the town's drainage area there are no formal stormwater controls. The only catch basins in the town were put in place when the bridge over Broad Creek was built by the Delaware Department of Transportation. Each catch basin simply captures runoff that would otherwise impound against the bridge abutments and discharges the runoff directly into Broad Creek without the benefit of treatment. The project contains numerous bioretention projects protecting the adjacent Broad Creek. The Town's Main Street runs alongside the Broad Creek and will employ water quality control projects including several bioretention areas, a step pool conveyance, and a +300 foot living shoreline. Complementary projects on the adjoining streets of Vine Street, South Street, Moore Street, and Main Avenue will provide further water quality control methods.



1,625 ft² invasive species removed



3,290 ft² of rain gardens



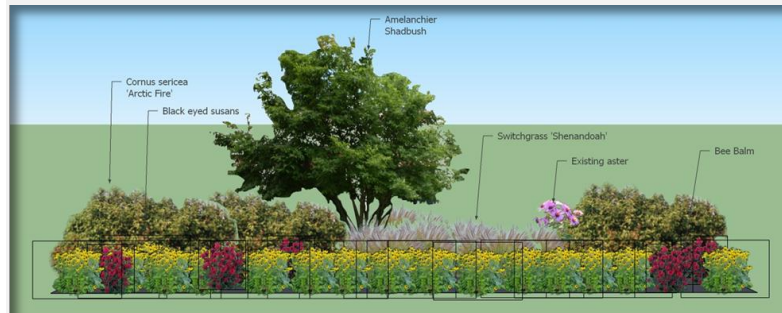
450 native plants



20 trees planted



325 lf living shoreline created



The proposed Bethel Garden with specific planting types.



THE LIVING SHORELINE

A Living Shoreline is proposed along 325 feet of shoreline at the former location of a shipbuilding wharf. The shoreline has eroded over the years as a result of runoff from Main Street and the steep surrounding grounds. The shoreline contains remnants of concrete riprap which will be reinforced by the placement of live stakes within joints and open spaces of the rip-rap.

The shoreline will be selectively cleared to remove invasive species such as multiflora rose, while keeping the fallen and dying trees, as they provide habitat for turtles, fish, eagles, and osprey. The top of slope will be planted with a vegetative buffer using strong rooted and wildlife friendly species, such as blue flag iris and jewelweed.

PROJECT ELEMENTS

- **Impervious pavement removal**— Removal of impervious surface will allow installation of other practices that treat stormwater.
- **Bioretention curb extensions and rain gardens**— These features filter and reduce stormwater runoff, allowing it to infiltrate into the ground before it enters into the storm drain system.
- **Street trees and increased urban tree canopy**— In urban areas a single tree can intercept from 500 to 4,000 gallons per year. Even young, small trees help, capturing 50 gallons per year. Trees not only treat stormwater, they provide a host of other benefits, including energy cost reduction in both summer (shade) and winter (proper placement can result in the reduction of energy use by 20-50%), aesthetics, property value enhancement, business traffic enhancement, and health benefits.
- **Living Shoreline**— It can be very effective to implement several natural elements to create more effective buffers in absorbing wave energy and protecting against shoreline erosion, rather than the more common use of seawalls or bulkheads.

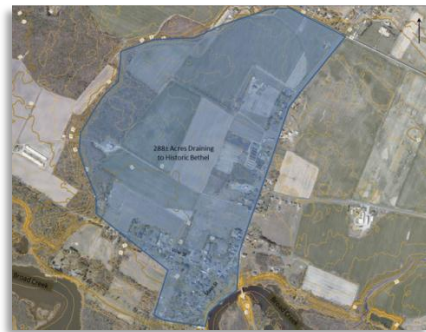
CREATING GREEN JOBS

For the construction phase, this project will employ local contractors and landscapers. The total estimated number of green jobs during the construction phase is 28 to 31 jobs.

For the maintenance phase, day to day care of the gardens will be performed by the residents. Seasonal maintenance, such as fertilizing and mulching, will be contracting to a lawn care contractor, with an estimated crew of 3.

Materials that will be integrated into the construction include interpretive signage, bird boxes, and bird baths, along with plant materials. Green jobs comprised of nurserymen, vendors and craftsman are estimated at 8 to 10.

G3 Grant Awarded \$100,000
Matching resources: \$210,208
Status: In Progress



The current drainage area for the proposed site

Existing conditions:



Project Partners: Delaware Dept. of Natural Resources and Environmental Control; George, Miles & Buhr; Sussex Conservation District; Delaware Nature Society; Chesapeake Bay Trust; U.S. Environmental Protection Agency.