Case Study:
NJDEP IN AND OUT OF THE BOX

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Emerson Woods Stream Restoration Project – July 2013

**Project Summary**

- Emerson Woods site has had an eroding gully for many years impacting water quality, downstream, local wildlife habitat was degraded, vegetation was altered and public safety was endangered.
- The cause of the erosion was 30" stormwater pipe discharging from residential area adjacent to Emerson Woods. In addition the gully soils were very erosive causing unstable conditions and continued erosion.
- NJ DEP has been looking for sites for use as mitigation for permitted flood plain and wetland activities that had impacts that could not be mitigated on-site.
- Bergen SWAN identified Emerson Woods as a potential project, and Conservation Resources Inc. (CRI) sought and obtained approval from NJDEP to use mitigation funds held by CRI to fund the project.
- CRI sent out a “Request for Proposals” to environmental engineering firms that specialize in stream restoration and Princeton Hydro of Ringoes, NJ was selected to design and construct the project. River Logic Solutions of Wellsboro, PA was the subcontractor that did actual construction.
- The gully was repaired by creating a riffle/pool sequence using large native stone, and stabilizing the banks with coconut fiber "soil lifts". Tree root wads were incorporated into stone.
• A large concrete vault was installed to catch sediment and floatables from the 16 acre watershed above the site. The vault will need to be cleaned periodically by Emerson DPW.

• Expected outcomes include improved surface water quality, increased infiltration of stormwater runoff into groundwater, enhanced wildlife habitat, improved safety.

• Tree removal was minimized by contractors, they removed less than 10 large mature trees. Several of the trees removed were already compromised by erosion and had roots exposed and had heart rot. Some of the trees removed were required by Bergen Soil Cons. District in order to shape slopes 2:1 or flatter.

• More than 50 containerized native trees and shrubs will be planted. 130 smaller shrubs will be planted in soil lifts. 400 herbaceous plant plugs will be established at the site. A small, local native tree producer has offered small native trees/shrubs for the site for free. We are exploring the idea of some public involvement with the fall planting.

• Native grass/forb seed mix was used under fabric and mulch with a "nurse crop" of oats which will provide temporary stabilization then die off.

• Split rail safety fence planned above steepest slopes and a deer fence is planned for entire project after the plantings are completed. Educational kiosk will be installed after planting is completed.

• We feel that the Emerson Woods Stream Restoration project can serve as a model for other municipal lands with restoration needs in New Jersey.

• Project funding will also support 3 years of monitoring and replacement of plantings, as needed, to be performed by Bergen SWAN
Emerson Woods Riparian Restoration Area

"Before"

Figure 1 Restoration Area Looking Upstream (West)

Figure 2 Restoration Area Looking Downstream (East)
Figure 3: Intermittent Stream Flowing from Restoration Area Looking East

Figure 4: Woods Road Crossing of Intermittent Stream Flowing from Restoration Area

Figure 5: Wetland Forest Downstream from Restoration Area
During and After Restoration

Large boulders used to stabilize toe of the eroded slope.

Soil lifts under construction to stabilized eroded slope.
Completed soil lifts, scour hole, sediment retention structure and lined channel.
Native seed and nurse crops germinated soon after soil lifts were completed.

Hand seeding native grass/Torb mix on slopes before erosion control blanket installation.

Stapling of erosion control blankets on slope around trees that were saved during construction.
Completed natural channel with grade stabilization structures, root wads and rounded river stone armoring.

Completed channel planted to native trees, shrubs and forbs.

Completed upstream end of project (soil lift area) being planted to native trees, shrubs and forbs looking through installed deer fencing.
PROJECT PERIOD

The project period shall begin on the earlier of the date of the execution of this Grant Agreement by Non-profit and CRI, or the date on which the Non-profit first incurred allowable project costs as outlined below. The project period shall terminate on November 30, 2013, the date when the project must be completed pursuant to the terms of the ACO, and Non-profit agrees to complete the project by that date. The parties intend, however, that the provisions of this Grant Agreement shall survive the termination of the project period and the completion of the Featured Project.

FEATURED PROJECT DESCRIPTION

NON-PROFIT: Flat Rock Brook Nature Center

FEATURED PROJECT NUMBER: 012-001

FEATURED PROJECT TITLE: The Flat Rock Brook Stream Corridor and Pondshore Restoration Project

TYPE OF PROJECT: __ Acquisition __ Stewardship

X ___ Restoration

___ Other Capital Project (Specify)
BRIEF DESCRIPTION OF FEATURED PROJECT:

This project comprises the riparian planting portion only of a larger restoration project which also includes the dredging of a small quarry pond, and the installation of a permeable-surfaced parking area for the Flat Rock Brook Nature Preserve. Riparian plantings of native trees, shrubs, and perennials would take place on an approximately 600 foot stream corridor feeding Quarry Pond, eventually feeding Overpeck Creek, including the shoreline of Quarry Pond. The funded portion of this restoration project would include:

- Plantings along an unnamed stream feeding Quarry Pond, and the shoreline of Quarry Pond.
- Installation of signage to inform local residents and preserve visitors of the benefits of the project, as well as things they can do to help enhance stream corridors; and
- Monitoring the project for three years to replace any dead or dying trees, shrubs, and perennials.

FEATURED PROJECT LOCATION: Flat Rock Brook Nature Center, 443 Van Nostrand Avenue, Englewood, New Jersey 07631
FEATURED PROJECT EXPENSES AND SOURCES OF FUNDS:

Project Budget:
Plantings of native trees and shrubs: $30,000
Mulch and stakes: $1,000
Reserve for replacement of dead or dying trees/shrubs: $5,000
Deer fencing: $3,000
Project administration: $5,000
Signage: $1,000
Monitoring for three years: $5,000
Total: $50,000
Thank you!

For more information, please contact:

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