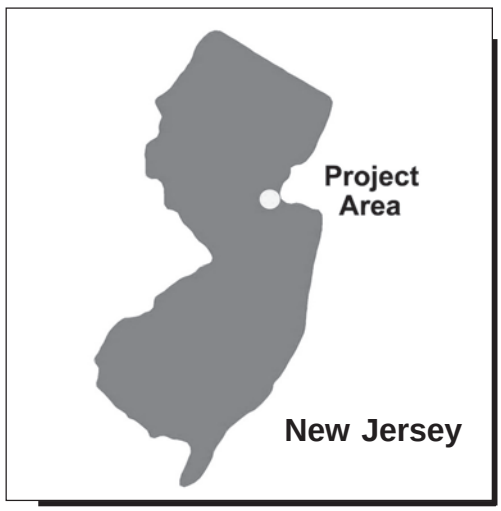
# Restoring and Enhancing Historic Property

*By Dr. JoAnne Castagna*

The United States Army Corps of Engineers® Finderne Farms Wetlands Mitigation Project is part of the Green Brook Flood Control Project, designed to reduce flood damage in New Jersey's Raritan River Basin in north-central New Jersey (Middlesex, Somerset, and Union Counties). The mitigation project, located on 130 acres of land along the Raritan River in Bridgewater Township, enhances and restores the land around the historic Van Veghten House in Somerset County, by creating wildlife habitats and a public park. The state is proud of its history, and this was taken into account when the Corps's New York District collaborated with them in 2000 on this project.

According to the biologist and project coordinator, the wetland mitigation work is enhancing existing wetlands, forested land, and grassland habitats on the site and creating more than 20 acres of man-made wetlands to sustain wildlife and create an educational public park. The land was used for farming crops and livestock from the late 1600s to just a few years ago when Somerset County purchased it for open space preservation and park development. Years of farming had caused erosion problems on the land.

The Van Veghten family owned a huge tract of land that included all of the property now under construction at the mitigation site. The 18th Century red brick Dutch farmhouse, the historic Van Veghten House, still stands on the bluff above the floodplain with a view of the Raritan River. The house, presently occupied by the Somerset County Historical Society, has a rich history that includes sheltering General George Washington's Quartermaster General, General Nathaniel Greene, during the Revolutionary War, while his Soldiers camped nearby. A volunteer from the Somerset County Historical Society explained that General George Washington danced the night away there also.



**A multisection precast concrete bridge is lowered by crane across a stream.**

The Corps, in cooperation with the County Parks Commission, began construction in January 2006. The land was graded around the clock for approximately 2 months to prepare it for spring seeding. Grading sets the stage by achieving a soil elevation that supports the water needs required for wetland plant growth. The soil in the wetland creation areas was then tilled using a 30-inch plow-bedding harrow, to create mounds and depressions, mimicking the uneven surface of a natural wetland. The soil was then fertilized and limed, and this past spring nearly 100,000 trees and shrubs were planted. Habitat mitigation areas were also seeded with a mixture of native grasses and wild flowers.

Several wetland habitats, forested land, and grassland habitats were enhanced or created to provide nesting and foraging habitats for a variety of birds, amphibians, reptiles, aquatic invertebrates, butterflies, and mammals.

The public will be able to view these habitats by walking along a 2-mile nature trail created by the Corps. The trail meanders throughout the site and has signs to educate the public about the habitats and wildlife and provide facts about the nearby Van Veghten House. Also on the site are two playing fields with parking lots and access roads, making the site a part of the Raritan River Greenway. Although most of the work was completed in the summer of 2006, the 12 acres of recreational area, such as the trail and playing fields, won't be open to the public until the spring of 2007 so the grass and plants have a chance to grow.

**The banks of the "Finderne Brook"—that flows into the Raritan River—have been contoured to prepare for planting.**

The project coordinator provided the following suggestions for others planning a mitigation project:

- Contact plant nurseries early. Find out what species are available and if the quantity and plant size needed for the project are available.
- Plan ahead when using native plants. If the project calls for growing native species using seeds and cuttings collected

## What the Project Entails

**Wetland, Forested Land, and Grassland Habitat Enhancement and Creation**

*Forested Wetland.* This is wetland that has deciduous woody vegetation with a tree canopy in excess of 20 feet in height. Approximately 14 acres of existing forested wetland were enhanced by planting trees (oak, ash, and sycamore) and shrubs (summersweet, silky dogwood, and high bush blueberry). Approximately 21 acres of pastureland were turned into forested wetland. The land was graded, then the area was seeded with a mix of wetland plants and floodplain grasses and planted with bare-root and container-plant material. Trees (oaks, ash, and sycamore) and shrubs (summersweet, silky dogwood, and high bush blueberry) were planted. In some areas the land was graded to create vernal pools, ephemeral spring ponding areas used by salamanders, invertebrates, and frogs for breeding.

*Scrub-Shrub Wetland*. This is a wetland that has primarily woody vegetation that is less than 20 feet tall. Approximately 8 acres were enhanced by seeding and planting the wetland to make it more desirable for various species of wildlife.

*Emergent Wetland (Wet Marsh*). Approximately 5 acres were enhanced by seeding and planting the wetland to make it more desirable for various species of wildlife.

*Riparian Forest (Corridor Forest)*. This is a forest that borders a river, in this case the Raritan River. Approximately 25 acres of Riparian Forest were restored by seeding and planting. In addition, the Riparian Buffer (the strip of woody vegetation along the river's banks) was increased to 100 to 300 feet to create a habitat for wildlife that thrives in this type of environment, including species of birds, mammals, reptiles, and amphibians. In addition, the increased buffer sustains shade cover for fish habitats within the river. In this buffer area, various shrubs (elderberry, spicebush, and black haw viburnum) and trees (hickory and silver maple) were planted. The trees were selected because of their shaggy bark at maturity that could provide a suitable roosting habitat for bats during the summertime.

*Stream Restoration*. An unnamed 800-foot stream, referred to as the "Finderne Brook," runs through portions of the site. The stream was eroding and the Corps created a more natural water flow and restored its habitat. To improve the water flow, the area bordering the stream (the floodplain) was widened to prevent the stream's banks from eroding and an undersized pipe culvert, that was constricting flow, was replaced with a natural bottom arched culvert bridge. To improve the stream habitat and stabilize the banks, the stream was graded, seeded with floodplain grass, planted with wetland plant cuttings, and covered with a degradable coir matting (made of coconut fiber) to stabilize riverbank soils until the vegetation takes hold. To prevent soil erosion, supplemental riverbed stone was placed in the stream. Also, the stones create a series of pools and riffles for fish and invertebrate habitats such as crayfish and pickerel frogs that have already been sighted in the stream.

*Grassland by the Van Veghten House*. Thirty-nine acres of enhanced grassland have transformed the property around the Van Veghten House that overlooks the Raritan River. The grassland provides visitors an unobstructed view of the vista across the floodplain toward the Raritan River. The floodplain was seeded with warm season grasses (Indian grass and bluestem) and wildflowers (ox-eye daisy, asters, and coreopsis) that will support a population of pollinating birds and insects, and the meadow will be a foraging area for the resident fox and red-tailed hawks, as well as other birds and small mammals.

**Thousands of "willow stakes" are planted in burlap weed barriers along the side of the stream.**

directly from the area, it's recommended that propagation activities be initiated at least two years in advance of project construction.

- Consider practical storage of plant material on-site. Plan storage for large quantities of plant material, especially bare-root trees and shrubs, on-site. Having a refrigerator truck, which mimics a greenhouse by maintaining temperature and humidity levels similar to a nursery, on-site allows storage of large quantities of plants and extends the time cuttings can be stored. Without the truck, storing and planting bare-root material is limited to 1 to 2 days for each delivery of plants. The truck also preserves live-stake material in its dormant state for a period extending beyond nursery availability.
- Have project designers make multiple site visits. Because conditions change, project designers should be involved team members during construction and visit the site several times during the design process. Incorporating any necessary design changes prior to construction helps to minimize delays and costly modifications.
- Collaborate with property stakeholders. The Corps reached an agreement with the New Jersey Historic Preservation Office to plant grassland rather than trees near the Van Veghten House to maintain the historic view of the Raritan River. The Corps also reached an agreement with a local utility company to plant unobstructive vegetation near overhead power lines to provide continued access to those areas.

The success of this mitigation project has encouraged the project coordinator to seek out other sites in the area to perform similar work. Wildlife already has been observed on the site, including red tail hawks, great blue herons, painted turtles, northern water snakes, freshwater clams, deer, and a resident red fox.

*For more information about the Van Veghten House, contact the Somerset County Historical Society at (908) 218-1281.*

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