



# NONPOINT SOURCE SUCCESS STORY

## New Jersey

### Restoring Riparian Areas and Enhancing Stormwater Management Improved Water Quality in the Lower Pequest River

#### Waterbody Improved

Stormwater runoff and pollutant loadings from the upstream drainage area led to high phosphorous and sediment levels that violated water quality standards in approximately 15 miles of New Jersey's lower Pequest River. As a result, New Jersey placed this waterbody on its Clean Water Act (CWA) section 303(d) list of impaired waters for total phosphorus (TP) and total suspended solids (TSS) in 2002. The North Jersey Resource Conservation and Development Council (NJRC&D) and Liberty Township implemented a number of best management practices (BMPs), such as riparian buffers, which improved water quality in the lower Pequest River. As a result, New Jersey removed the Pequest River (below Furnace Brook) from its 2012 list of impaired waters for TP and TSS.

#### Problem

The Pequest River is a 35-mile-long tributary of the Delaware River in the Warren County section of New Jersey's Skyland region (Figure 1). This area is an important recreational resource, characterized by rolling hills, forests, agricultural operations and significant suburban development along its riparian corridor. A characterization of the lower Pequest River watershed indicated that a lack of riparian buffers, large amounts of stormwater runoff and high pollutant loadings from the upstream drainage area were likely causes of the lower Pequest River's degraded water quality.

New Jersey's water quality standards require maximum TP and TSS concentrations of less than 0.1 milligrams per liter (mg/L) and 25 mg/L, respectively. Water quality sampling by New Jersey collected from station 01445500 indicated that these standards were not being met. This prompted New Jersey to add two segments, (1) the Pequest River on Walter Street in Belvidere and (2) the Pequest River at Pequest, to its impaired waters list for TP and TSS in 2002.

In 2006 NJDEP changed its basis for defining assessment units from stream segments to 14-digit hydrologic unit code (HUC14) subwatersheds. Therefore, these two impaired stream segments became classified as a single HUC14 assessment unit, which was listed as impaired for TP and TSS on the 2006 CWA section 303(d) list as Pequest River below Furnace Brook (HUC14 02040105090060).

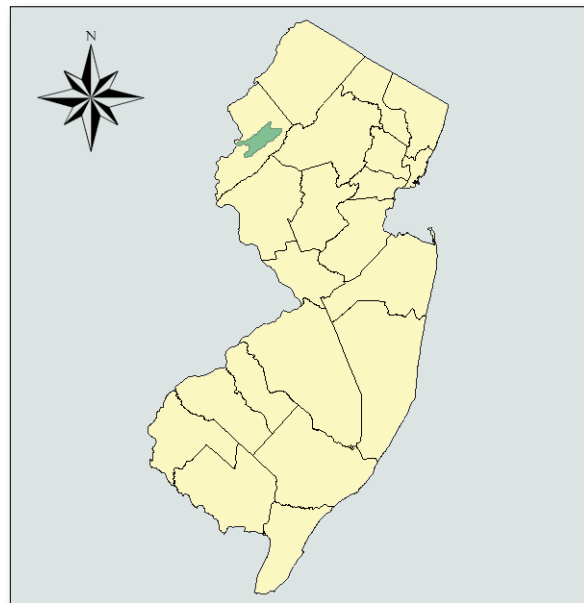


Figure 1. The Pequest River watershed (light green shaded area) is in northwestern New Jersey.

#### Project Highlights

In 2000 New Jersey launched a statewide watershed initiative that supported and expanded local partnerships in each of New Jersey's 20 watershed management areas. New Jersey's statewide watershed initiative catalyzed a restoration effort in the Pequest River watershed. NJRC&D completed five riparian restorations in the Pequest River watershed between May 2002 and April 2006 (Figure 2).



Figure 2. Volunteers planted trees in a riparian area in June 2005 (left). By August 2010 (right), a healthy riparian buffer had become established along this stretch of the Pequest River.

The Liberty Township Environment Commission, in cooperation with local partners, also installed an oil/sediment manufactured stormwater treatment device and eight stormwater inlet treatment filters treating stormwater runoff that discharged to Mountain Lake Brook, immediately below the discharge of Mountain Lake. Implementing these BMPs was part of a larger collaborative watershed approach that included watershed education and outreach components to expand awareness in the region. Partnership projects and community service opportunities were instituted by the New Jersey Department of Environmental Protection's (NJDEP's) AmeriCorps New Jersey Watershed Ambassadors Program during this period. A Watershed Ambassador, stationed at the NJRC&D office, assisted with implementing and maintaining riparian restoration projects, performing stream visual assessments and conducting numerous educational programs in the watershed. Pollutant loading reductions from wastewater treatment plants upstream of the waterbody in response to the development of a TMDL were also instrumental in attaining water quality standards in the waterbody.

## Results

As a result of the restoration activities that were implemented, NJDEP's ambient monitoring data collected in the Pequest River below Furnace Brook assessment unit between January 1, 2006, and December 31, 2010, demonstrated that this waterbody was meeting surface water quality standards for TP and TSS. The improvement in water quality can be seen in sampling data from sampling station 01446400, which shows decreases in the exceedances of maximum allowable pollutant concentrations over time (Figure 3). As a result, New Jersey removed the Pequest River (below Furnace Brook) from its 2012 list of impaired waters for TP and TSS.

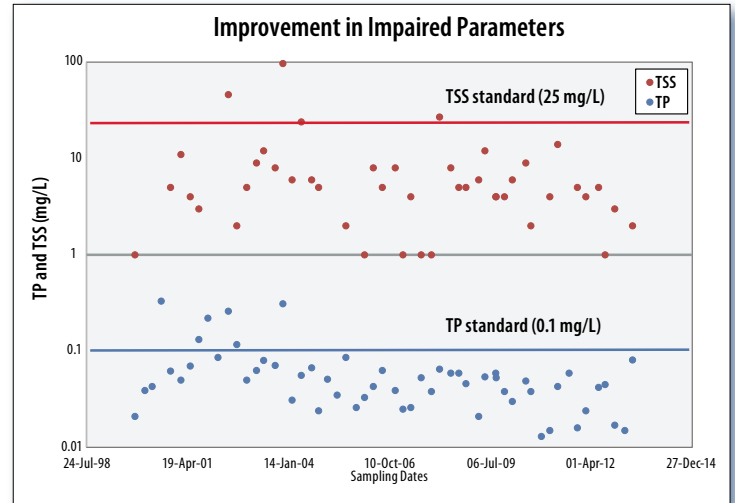


Figure 3. Samples collected at Pequest River station 01446400 show that concentrations of total phosphorus (TP) and total suspended solids (TSS) decreased over time and now meet water quality standards. The 02/19/2008 TSS exceedance was a transient event resulting from storm events. For TSS, values below the detection limit are not displayed.

## Partners and Funding

In 2000 the NJRC&D was awarded a \$412,000 CWA section 319 grant to initiate stream buffer restoration in watersheds throughout the north-west region of New Jersey. This project involved the creation of a Riparian Advisory Committee composed of the various federal, state, county and municipal government officials; representatives from the agricultural, lake and educational communities; and interested watershed residents. Five riparian restorations were completed in the Pequest River watershed, costing approximately \$43,000 total. Completion of these restoration projects involved volunteer participation from local stakeholder groups.

In 2003 the Liberty Township Environmental Commission received a \$117,000 CWA section 319 grant to install an oil/sediment manufactured stormwater treatment device and inlet filters. Volunteers from the Environmental Commission and the Mountain Lake Community Association and Advisory Group helped with the project. Partnership projects and community service opportunities were instituted by the NJDEP's AmeriCorps New Jersey Watershed Ambassadors Program during this period; these contributed to the water quality improvement.



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