

NONPOINT SOURCE SUCCESS STORY

Stormwater BMP Project Improves Water Quality at Wanaque River/ Greenwood Lake

Waterbody Improved

Stormwater runoff from a predominately residential lake community led to the impairment of the Wanaque River. As a

result, the New Jersey Department of Environmental Protection (NJDEP) added the *Wanaque River at East Shore Drive* assessment unit to New Jersey's 2002 Clean Water Act (CWA) section 303(d) list of impaired waters for Unknown Toxicity (based on benthic macroinvertebrate sampling in 1998–1999). To address the problem, West Milford Township developed a CWA section 319-funded watershed management plan that identified sources of nonpoint source pollution discharging to Greenwood Lake and corresponding remedial measures. Implementation included intensive storm drain cleaning and targeted education and outreach concerning use of low/no phosphorus fertilizer and proper septic system management. Due to these actions, water quality improved and *Wanaque River/Greenwood Lake at East Shore Drive in West Milford* was removed from the impaired waters list in 2010.

Problem

Northeastern New Jersey's Wanaque River is a tributary of the Passaic River that ultimately empties into Newark Bay (Figure 1). Water quality in this section of the Wanaque River is greatly influenced by the 1,920-acre Greenwood Lake, a highly used recreation area (Figure 2). Greenwood Lake and the Wanaque River receive stormwater runoff from residential and agricultural areas from Greenwood Lake and Pine Cliff Lake/Belchers Creek.

Monitoring data from the NJDEP's Ambient Macroinvertebrate Network collected in 1998–1999 indicated that the macroinvertebrates at the sampling station AN02555 in the *Wanaque River/Greenwood Lake at East Shore Drive in West Milford* assessment unit (currently designated as HUC14 02030103070030 *Wanaque River/Greenwood Lake above Monks Gauge*) showed an unusually high number of head capsule deformities. As a result, the NJDEP added the assessment unit to the 2002 CWA section 303(d) list for Unknown Toxicity.



Figure 1. The Wanaque River is in northern New Jersey.



Figure 2. The water quality of Greenwood Lake strongly influences the Wanaque River.

Project Highlights

In 1999 West Milford Township was awarded a CWA section 319(h) grant to design and install 19 sediment trap stormwater catch basins. NJDEP developed a total maximum daily load (TMDL) for phosphorus in Greenwood Lake (Total Maximum Daily Load for Phosphorus to Address Greenwood Lake in the Northeast Water Region), which was approved by the U.S. Environmental Protection Agency (EPA) in September 2004. Moreover, in 2008 EPA approved the NJDEP's TMDL Report for the Non-Tidal Passaic *River Basin Addressing Phosphorus Impairments* which covered West Milford and the entire Wanague River watershed. The West Milford Township partnered with the Greenwood Lake Commission, state and county representatives, and other interested watershed stakeholders in the agricultural, lake and educational communities. The restoration of the Wanague River/ Greenwood Lake was accomplished by implementing recommendations of the NJDEP-approved Lake Characterization and Restoration Plan for Greenwood Lake and the TMDLs.

In 2004 West Milford Township was awarded an additional CWA section 319(h) grant in the amount of \$161,875 to develop a watershed implementation plan. This led to the application of various nonpoint source mitigation measures such as storm drain cleaning and targeted education and outreach by the watershed partners regarding septic system maintenance and fertilizer application.

Results

As noted in NJDEP's 2010 Integrated Water Quality Monitoring and Assessment Report (2010 Integrated Report), bioassessment sampling conducted in October 2008 using EPA's Rapid Bioassessment Protocol showed that the *Wanaque River at East Shore Drive in West Milford* (current designation: HUC14 02030103070030 *Wanaque River/Greenwood Lake Above Monks Gauge*) received a High Gradient Macroinvertebrate Index rating of 51.7, which is considered good (a rating of 10 would indicate impairment), and a habitat rating of 166 (considered optimal). These data indicated that the assessment unit was no longer impaired; therefore, the assessment unit was delisted in the NJDEP's 2010 Integrated Report.

Partners and Funding

NJDEP has been actively involved in watershed management in the Wanaque River/Greenwood Lake since 1999. Over \$1 million in CWA section 319(h) funds were used to support the development and implementation of a watershed implementation plan, manufactured treatment devices and rain gardens. This funding was matched by \$140,000 from West Milford Township through in-kind services.



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