

Hydrologic Investigation

Bridgeton - Nockamixon - Tincum

Joint Groundwater Commission

Bucks County, PA

Upper Bucks County, Pennsylvania is a region of exquisite natural resources that maintains a tradition of rural life in the face of burgeoning land development pressures. The Bridgeton-Nockamixon-Tincum (BNT) Joint Groundwater Commission is a municipal consortium that teamed with Princeton Hydro to develop and implement a detailed hydrology study in part of the Exceptional Value (EV) designated Rapp Creek watershed with goal of estimating recharge potential in a sensitive aquifer.

The hydrology study area lies atop a monolithic diabase bedrock intrusion that has inherent limits to deep groundwater flow. For two years, an intensive monitoring network was used to amass automated and manual measurements from weirs, well points and piezometers, stream staff gauges, and event-based rain gauges.

The comprehensive data set was integrated into a water budget model; the modeled output estimated that deep aquifer recharge potential represented a small fraction of annual precipitation. Additionally, the hydrology study demonstrated that low-order streams and wetlands in the EV-status Rapp Creek watershed were dominated by shallow groundwater flow paths and, therefore, potentially vulnerable to land use changes.

Based on the hydrology investigation findings, BNT will recommend adjustments to its member's respective municipal planning documents and land usage rules.

The project received funding from the United States Environmental Protection Agency as part of the Tincum Creek Watershed Protection Development Program/USEPA Grant no. CD-973082-01-0.

A companion pilot study examines the relationship between salamander occurrence and hydrologic variables for use as an indicator of watershed integrity.

