

Regional Water Quality Assessment: Gas Drilling in Devonian Shale *Delaware River Greenway Project* *Bucks, Lehigh, Northampton Counties, PA*

In recent years, advances in hydrocarbon extraction methods and fluctuating energy prices have generated interest in gas-rich Devonian-age shale formations, particularly the Marcellus Formation. Removing hydrocarbons from Devonian-age shale requires 5,000 to 10,000-foot deep wells and substantial quantities of water. Because exploration and production sites generate large amounts of waste fluids that contain a multitude of possible water pollutants and that possibly intersect potable aquifers as well as sensitive ecological resources, concerns regarding environmental management of drill sites exist.

Princeton Hydro was hired to characterize baseline water conditions within the three hundred square mile Pennsylvania portion of the Lower Delaware River Wild and Scenic-designated region in areas that may be influenced by future natural gas deep drilling and production well sites.

Princeton Hydro developed a sampling plan according to priorities that blended existing gas permits and leaseholder parcels with information about the region's hydrogeologic framework, especially vulnerable and high-quality natural settings, and land use and land cover traits. Princeton Hydro's plan included sampling both surface water and groundwater throughout the region. Moreover, our sampling strategy included laboratory analyses for a targeted suite of parameters among the vast array of potential contaminants that could exist in drilling and production fluids.

The sampling plan will be implemented in the summer of 2009 and the results will be made available to municipalities in the region as they strive to balance water supply, water quality, natural resource stewardship, and energy sector management policies locally.

