



# Water Resource Protection for Aquifer Protection Districts

## Dover, New Hampshire

The City of Dover, New Hampshire, is a moderate-size city (population 26,000) located in south coastal New Hampshire. Dover draws most of its drinking water supply from five wellfields located in varied hydrogeologic environments within city borders. In recent years, increased population growth and economic development have simultaneously increased the demand for potable water and raised concerns over the continued quality of that water. Recognizing the need for better understanding of the potential impacts of increasing urbanization on both the available quantity and quality of water pumped from the city's wells, Dover sought municipal planning assistance from Horsley Witten Group, Inc. (HW) to help them focus and manage development in the least detrimental manner possible.

HW, aided by detailed GIS coverage, carried out a study of the Smith & Cummings APD with five primary accomplishments:

- A nitrogen loading model was developed for current and future land use conditions within the APD.
- A hydrologic budget was created for the APD to determine the impact of changing patterns of stormwater discharge on recharge to the APD. Hydrologic changes that may occur as an APD approaches buildout include a volumetric increase or decrease of available recharge and a corollary degradation of recharge water quality as the area of impervious coverage increases.
- A "Development Review Model" was produced which calculates the nitrogen loading and recharge impacts of individual development proposals within the APD. On a case by case basis, model results were compared to two performance standards - a five milligram per liter (mg/L) average nitrogen concentration in groundwater beneath the site, and a requirement that post-development recharge from both natural and paved areas on a site should equal pre-development recharge.
- A list of Best Management Practices (BMPs) and performance standards was recommended to apply to proposed stormwater infiltration within the APD.
- The City's APD Zoning Ordinance was modified to include requirements for the use of the Development Review Model and BMPs for stormwater infiltration.

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