

Enhancing the Condition and Management of Forests in Municipal Watersheds



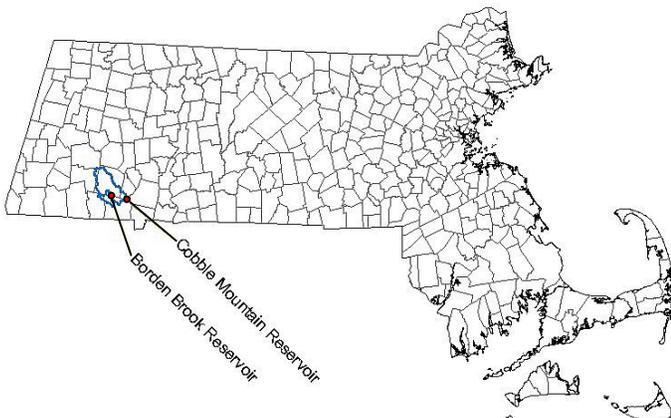
BACKGROUND

Massachusetts municipal surface water supplies are rural, forested, and cover more than 250,000 acres. Thousands of acres of municipal wellfields also depend on forested groundwater recharge areas, which contribute water to those wellfields. In most instances, private landowners control substantial portions of these vital watersheds.

During the last 5 to 10 years, there has been a temporary decrease in the rate of suburban sprawl and forest fragmentation throughout southern New England as a result of a weak economy and real estate market. As earlier building booms in the 1960s and 1980s have demonstrated, population increases and improved economic conditions, including the demand for second homes, can lead to rapid increases in forest conversion and other changes in watershed conditions that inexorably degrade stream stability and water quality. Conservation of forests and wetlands in key watershed areas is critically important before indiscriminate development generates high restoration and mitigation costs to maintain or improve water quality.

LOCATION

The project area includes the Cobble Mountain and Borden Brook Reservoir sub-watersheds of the Westfield River, a Category I watershed. The area is west of the Connecticut River and is managed by the Springfield Water and Sewer Commission (SWSC). The SWSC owns approximately 40 percent of the contiguous forest blocks surrounding the reservoirs in the watersheds. The remainder of the watersheds is in private, town, or land trust ownership. The



largely forested watersheds include orchard, Christmas tree, and maple syrup operations; horse and agricultural lands; and increasing amounts of residential development. If highway access improves with the addition of an exit on the Massachusetts Turnpike (I-90), residential development will increase rapidly.

GOALS

The primary goal of this project is to develop, apply, and refine a comprehensive approach to forest management on private land in municipal watersheds with the objective of enhancing water quality. To do this, the following steps will be taken:

- Determine the location and acreage of lands in private ownership.
- Determine the proportion of watershed and aquifer recharge areas that are forested, developed, or in agricultural use.
- Use GIS-derived and land use data to develop models to determine the relative threat of non-point source pollution over temporal and spatial scales.
- Develop 20 Forest Stewardship plans on approximately 1,500 acres.
- Initiate the establishment of forest riparian buffers on agricultural lands for retention of soil and attenuation of the effects of agricultural chemicals on the watersheds.
- Utilize GIS to classify streams and riparian areas on private forestlands and prioritize those falling within municipal watersheds.

METHODOLOGY

The Massachusetts Department of Environmental Management (DEM) Bureau of Forestry, Springfield Water and Sewer Commission, University of Massachusetts, and consulting foresters will collaborate on:

- GIS-based mapping of high priority forests,
- outreach to private forest landowners with high priority parcels,
- development of forest management plans with special attention to forest health and water quality, and
- documentation of tools, techniques, and lessons learned for transfer to other municipal water supplies in the region.

Since 1999, the Northeastern Area and the Northeastern Area Association of State Foresters have sponsored a cooperative challenge grants program to promote watershed health and restoration through the conservation, restoration, and sound stewardship of trees and forests.

The GIS-based mapping will be based on initial research and development in the Chicopee River Watershed in central Massachusetts (completed September 2002) and subsequent operational application of the mapping, modeling, technical exchange, and watershed management planning during an ongoing EPA-funded Source Water Protection study (July 2002 to December 2003).

GIS specialists at the DEM Bureau of Forestry will replicate and refine the mapping work done on other sites in consultation with staffs at the University of Massachusetts (UMass) and the SWSC. In addition, they will streamline and automate the database development and analytical methods to improve the accessibility and efficiency of the GIS methods for other water utilities and conservation organizations in the region.

Specifically, the DEM Bureau of Forestry GIS staff, in consultation with MassGIS and the Watershed Exchange and Technology (WET) Partnership at UMass, will develop special purpose software applications that can be used with commonly available hardware (PC with CD drive and color inkjet printer) and software (ESRI ArcView) as well as a User's Guide.

The Massachusetts Forest Stewardship Program Coordinator and DEM Service Foresters will contact private forest landowners in high priority areas, initiate cost-sharing opportunities, and review the forest management plans developed by consulting foresters. DEM foresters and the SWSC also will explore collaborative opportunities (e.g., land or conservation easement purchases) with local, regional, and national non-governmental organizations (NGOs) such as the Trust for Public Land, The Nature Conservancy, and the Trustees of Reservations. The Massachusetts Executive Office of Environmental Affairs (EOEA) Watershed Initiative and associated open space protection programs also could assist with this work.

OUTCOMES AND ACCOMPLISHMENTS

The project team will develop a final report that organizes and documents the project work as a fully developed example for other watershed managers in the region. The WET Partnership will compile and edit the technical sections written by other team members. The report and supporting information will be disseminated on the WET Partnership web site with links to other on-line resources.

This project will serve as a prototype for municipal watersheds serving cities and towns throughout the region. Unlike large cities (Boston, New York, Hartford, or Providence) with extensive professional staffs, smaller utilities are in need of a systematic and efficient approach to watershed assessment, land conservation, and forest management to protect drinking water supplies. This is

especially challenging and urgent in areas with a high proportion of private forestland.

PARTNERS

- Massachusetts DEM Bureau of Forestry
- University of Massachusetts—Amherst WET Partnership
- Springfield Water and Sewer Commission, Natural Resources and Forestry
- Massachusetts Executive Office of Environmental Affairs, Watershed Initiative and MassGIS

FUTURE PLANS

A 2-day symposium and workshop will be held featuring this project (including a study tour of the watershed) in cooperation with the Northeast Association of Watershed Forest Managers (NEAWFM), Society of American Foresters, Forest Stewards Guild, American Water Works Association, other NGOs, and professional organizations with interests in land and forest conservation.

The expected completion date of the entire project is December 2003.

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