

# Beaver Lake Watershed Management Plan • August 2007

## Executive Summary

The Beaver Lake watershed (the watershed) is located in the Towns of Auburn, Chester, and Derry, NH. The watershed drains approximately 10.5 square miles (mi<sup>2</sup>), concluding at the outlet of Beaver Lake Dam in Derry, NH. The Beaver Lake Watershed drainage area for Auburn, Chester, and Derry is 0.044, 2.78, and 7.72 square miles, respectively. Over the last 50 years, the characteristics of the watershed have changed dramatically due to an explosion of population and business development growth. To put this growth into perspective, between 1960 and 2000, the total population of all three watershed towns increased by an average of 355%, from 9,332 to 42,495 people. Much of this growth was spurred by employment opportunities in the metropolitan Boston area, and convenient access to Boston via Interstate 93 from those living in the watershed area. With development and growth have come considerable changes in the watershed characteristics.

The landscape within the watershed has changed considerably in the past four decades. In 1962, over 7.7 mi<sup>2</sup> of the 10.5 mi<sup>2</sup> Beaver Lake Watershed was forested. By 1998, forested land was reduced to 5.9 mi<sup>2</sup>, a 23% reduction. Alternatively, residential land increased from 299 acres (0.47 mi<sup>2</sup>) in 1962 to over 1,656 acres (2.6 mi<sup>2</sup>) in 1998, a 454% increase. In short, forest and open lands have been displaced with urban growth and development.

In December 1992, the NH Department of Environmental Services conducted a diagnostic and feasibility study on Beaver Lake. The findings pointed to increased nutrient loading into the lake from poorly maintained roads, over-fertilized lawns, and land use changes resulting in polluted runoff into the tributaries to Beaver Lake and directly to the Lake. It should be noted that in 1989-1990 a sewer line was installed around Beaver Lake, which assisted in reducing the pollutant loading from several failed septic systems. While the sewer line marked improvement to Beaver Lake, Volunteer Lake Assessment Program testing at Beaver and Harantis Lakes showed that nutrient loading from other sources to the tributaries and the lake continued. It was clear that a watershed approach was the best way to address the continued increases in nutrient loading in the watershed.

The change in land use over time has impacted the Beaver Lake Watershed at varying levels. The resources that have been affected include water quantity, water quality, open space and land use, biological and habitat, and recreation. Because many watershed residents were concerned with how land use changes that were creating polluted runoff were impacting their watershed resources, they sought input from the NH Department of Environmental Services on their options for support for a watershed management plan. The purpose of the management plan was for watershed citizens to collectively identify issues and design solutions. Ultimately, the plan is a springboard for having real, on-the-ground changes in the watershed. Boards, Commissions, Councils, and others from the Towns of Auburn, Chester, and Derry; members of the Beaver Lake Improvement and Harantis Lake Property Owners Associations; and students and faculty of Pinkerton Academy forged the Beaver Lake Watershed Partnership. Since 2006, the Partnership has been routinely meeting to identify issues and areas of concern and form watershed-wide recommendations.

Relative to this Plan, Section 1 provides background on the watershed approach, support for the project, and the intended outcome for the Plan. Section 2 describes the evolution of the Partnership, including the Stream Teams, its structure, and a summary of BLWP meetings and events. Section 3 provides background or context for each of the recommendations with goals, objectives, and activities as well as the resources required to implement them. Section 4 contains recommendations for implementing the Plan's goals, objectives, and activities along with potential sources of funding. The appendices include references, resources, and a matrix of land use ordinances for the Towns of Auburn, Chester, and Derry.

### **Summary of recommendations**

The Plan's resource recommendations focus on watershed resources with the five sub-sections: Open Space, Land Use, Growth; Water Quantity; Water Quality; Biological and Habitat; and Recreation. There are twelve goals in the combined five sub-sections. Within these twelve goals there are twenty-three objectives. There are seventy-eight activities planned within the objectives. The resource sub-sections and the twelve goals are:

#### ***Open Space, Land Use, Growth***

- Goal 1: All watershed towns share the same vision for protecting the watershed and coordinate their approach to regulations and protections.
- Goal 2: The watershed is protected through land use policies that minimize adverse impacts to the Beaver Lake watershed.
- Goal 3: Land use in the Beaver Lake watershed is consistent with watershed protection.
- Goal 4: All non-prime wetlands within the Beaver Lake watershed have greater buffer protection.
- Goal 5: Auburn, Chester, and Derry have Open Space Ordinances.

#### ***Water Quantity***

- Goal 1: The current flow regime in the Beaver Lake watershed is maintained for the protection of aquatic, recreation, wetland, wildlife, and aesthetic resources.
- Goal 2: The current flow regime in the Beaver Lake watershed is maintained by managing development.
- Goal 3: The public is aware of how their actions impact river/brook flows in the Beaver Lake watershed and what actions the public can take to improve water resources.

#### ***Water Quality***

- Goal: Waterbodies in the Beaver Lake watershed support their designated uses and exhibit no impairments.

#### ***Biological and Habitat***

- Goal 1: All aquatic habitats within the Beaver Lake watershed are free from invasive species.
- Goal 2: The Beaver Lake watershed benefits from a net increase in protected land that supports wildlife connectivity and continuity and fish passage.

#### ***Recreation***

- Goal: The waterbodies in the Beaver Lake watershed support diverse recreation opportunities that are environmentally responsible.

For further information, download the entire plan at [BLWP.net](http://BLWP.net).