

Conservation Matters

A monthly column focused on conservation education, as the result of collaboration among several area conservation commissions and organizations. If your town's commission or conservation organization would like to contribute articles, please contact Jessica Tabolt Halm jesshalm78@gmail.com

Title: Conserving and Managing the Watershed: The Army Corps of Engineers, Quincy Bog, and Snow Measurements

Submitted by: Janice Mulherin, Pemi-Baker Land Trust

For over a decade, the Baker Forest, a part of the Quincy Bog Natural Area in Rumney, has been the site of a United States Army Corps of Engineers (USACE) snow course data survey. The survey is a systematic method for measuring snow depth and snow water equivalent (SWE) in a given area. Drifting, melting, and natural compaction of snow can make it challenging to measure, and result in varied measurements within meters of a study area. The basic principle guiding this method is that measurements are made consistently at the same locations, during the winter, so that comparisons can be made from month to month and year to year. An ideal snow course survey site is located in a relatively sheltered area.

These surveys are critical for USACE control of water levels in lakes and reservoirs and to the National Weather Service (NWS) in assessing snowmelt runoff events. In New England, snowmelt events produce more major floods than rain-only events, including tropical storms and hurricanes.

Staff members from the Franklin Falls Dam in Franklin conduct bi-weekly snow course surveys each winter until the snowpack is no longer significant to flood control operations. Each snow course has five designated areas to measure the snow depth and SWE (by weighing the melt water from a known volume of snow). The NWS uses these data to calibrate their snow cover model, which they use for estimating the amount of snow that has fallen over large regions. USACE, in turn, uses the model to anticipate proper water level regulation in lakes, controlling river flow, and estimating flood peak levels.

Franklin Falls Dam is located on the Pemigewasset River and is a key site in the comprehensive flood risk management plan for the Merrimack River basin. The dam provides flood protection to communities along the river including Franklin, Boscawen, Canterbury, Concord and Bow. During flood control operations the water storage area behind the dam consists of 2,800 acres. This acreage extends about 12.5 miles upstream through the towns of Hill, Sanbornton, New Hampton, and Bristol, and ends at Ayers Island Dam in Bristol, which is owned by Eversource (formerly Public Service Company of New Hampshire). Franklin Falls Dam can store up to 50.2 billion gallons of water for flood control purposes. This is equivalent to 2.8 inches of water covering its entire drainage area of 1,000 square miles, which represents the largest drainage area upstream of the 35 dams built by the USACE's New England Division.

Last fall, the Baker Forest snow survey site needed to be moved to a different location to accommodate timber harvesting. The snow course was relocated to another area of mature pine

trees so that the data collection can continue.

Quincy Bog is pleased to be part of this important project. Our mission is to offer the public opportunities for nature education, research and nature-centered outdoor recreation. We welcome you to visit us at Quincy Bog Natural Area or Quincy Pasture Forest. For more information, check out our website at <http://www.quincybog.org/>