

Lyme Conservation Commission Post Pond Water Release Policy



I. PURPOSE

The Chaffee Wildlife Sanctuary is managed by the Lyme Conservation Commission under the authority of New Hampshire law (RSA 36-A). The Commission has determined that it is in the best interest of the Chaffee Wildlife Sanctuary, waterfront property owners, and the public to establish guidelines on what conditions will be used by the Commission in breaching or granting permission to other interested parties to access the Clay Brook beaver dams on or by crossing Town owned property for purposes of breaching the dams to lower the water in Post Pond.

II. STATE LAWS and REGULATIONS:

New Hampshire law (RSA 210:9 “Protection of Beaver”) determines when beaver dams may be breached. Section I states: “No person shall destroy or disturb or interfere in any manner with the dams or houses of beaver, without first obtaining a special permit from the executive director (of the Department of Fish and Game)”. The Conservation Commission has obtained such a permit. Section II provides the conditions under which others may be given permission, stating, in part, “a landowner ... or any town or municipal or state official or employee, may destroy beaver and beaver dams on property under their control to protect property, public highways, or bridges from damage or submersion with the permission of the owner of lands affected, if applicable.” For purposes of this Policy, the Conservation Commission has determined that “submersion” only occurs when the water level exceeds the “normal mean high water elevation” as determined by the New Hampshire Department of Environmental Services (NHDES).

New Hampshire wetlands regulations (Administrative Rule Wt 303.05(j)) specify conditions under which a beaver dam may be removed without a permit. The Commission has received written assurance from NHDES that no permit is needed for breaching beaver dams as long as these conditions are met.

III. POLICY

The Conservation Commission adopts the following policy for breaching the dams and for granting permission to interested parties to breach beaver dams in Clay Brook on the Town’s property and/or cross Town owned property for purposes of breaching beaver dams that are not on Town property.

A. Regular Periodic Breaching:

- i. Regular periodic breaching shall only be done by town employees specifically designated to perform this duty. These employees will be trained by members of the Conservation Commission and under the direct supervision of the Conservation Commission Chair or his/her designee.

- ii. Beginning about April 30 and until about November 1, or whenever the season ends for playing field use, these trained employees shall weekly record in a log the water level on the local gauge.
- iii. If the water level exceeds 2.0 feet on the local gauge or 427.80 ft NGVD (National Geodetic Vertical Datum 1929), and if the water topping the controlling dam is not exceeding a level where breaching can occur safely, these employees will remove a portion of this dam, not to exceed six inches in depth, in accordance with NHDES Administrative Rule Wt 303.05(j). For safety reasons, at least two people must be present during any breaching activity.
- iv. Photographs will be taken of the local gage, dam (before and after breaching) and brief description of the breaching activity written in the log.

B. Breaching by Others:

Interested parties (defined as Post Pond shoreland owners) other than Town officials and employees specifically designated to perform this duty may breach beaver dams on Town property (or cross Town property for the purposes of breaching beaver dams) under the following conditions:

- i. Permission must first be obtained from two members of the Conservation Commission. (The Commission may require that the breaching be supervised by a Conservation Commission member.)
- ii. Between January 1 and April 30 no breaching of any of the Clay Brook beaver dams will be permitted.
- iii. At least two people must be present during the breaching.
- iv. The water level in Post Pond must exceed 3.0 feet on the local gage (428.80 ft NGVD) and be topping the beaver dam controlling the water level of Post Pond by 2 inches or less.
- v. All breachings must be conducted in accordance with NHDES Administrative Rule Wt 303.05(j), which requires as follows:
 - 1. any machinery used does not enter the water or create any disturbance by filling or dredging to adjacent surface waters, wetlands, or their banks;
 - 2. all dredged materials are placed out of the area that is within Department of Environmental Services' jurisdiction; and
 - 3. removal of the dam is done in a gradual manner that does not allow a sudden release of impounded water to cause erosion or siltation.
- vi. An authorized person may, during any five (5) day period, breach one (1) beaver

dam by not more than the equivalent of 6 inches deep by 10 feet wide. (The Town's consultant recommends several smaller breaches as being more effective than a single large breach in limiting the beavers' ability to repair their dam.)

- vii. No breaching of a beaver dam below the silt level will be permitted.
- viii. Reasonable efforts will be made to inform the public when a water release has been approved by posting a notice on the Town's official web page.
- ix. Any water release by other than Town employees that is approved or denied shall be included in the minutes of the next regular meeting of the Conservation Commission.

C. In the event of an emergency, the Conservation Commission is authorized to *deny* permission to breach a dam (by either Town employees or other interested parties) if the conditions set forth herein are met or *grant* permission if said conditions are not met.

Adopted: June 9, 2004 Final Wording
Approved: July 5, 2004 Revision 1
Approved: April 11, 2005 Revision 2
Approved: June 6, 2006 Revision 3
Approved: May 7, 2007 Revision 4
Approved: April 21, 2008 Revision 5

APPENDIX: BACKGROUND INFORMATION

Hydrology

The water level in Post Pond is primarily a function of the inflow from Trout Brook, evaporative losses from the pond itself and the outflow through Clay Brook.

The Trout Brook watershed is approximately 14 square miles in area, rising 5.5 miles to the east on the slopes of Smarts Mountain, and includes Trout Pond and a large beaver pond. The “normal” flow of Trout Brook is seasonal in nature with a maximum during spring snow melt. Average monthly precipitation in Lyme varies from 2.3 inches in February to 3.7 inches in July and August.

Lyme Warm Weather Rainfall Amounts in Inches

	2001	2002	2003	2004	2005	2006	2007	Long term average
May	1.7	4.9	3.4	5.4	4.4	7.0	2.5	3.4
June	2.9	3.6	2.3	2.1	6.3	9.9	1.5	3.4
July	2.7	3.7	4.6	2.9	2.5	5.2	5.0	3.7
August	1.8	1.6	5.4	6.0	4.7	3.0	2.9	3.7
September	3.4	3.2	5.1	2.9	2.6	2.5	3.6	3.5
October	1.6	2.8	4.7	1.1	10.3	8.0	6.4	3.5

The Federal Emergency Management Agency has calculated that the 100-year discharge of Trout Brook at Post Pond is approximately 2,620 cubic feet per second (cfs), but its flow is restricted by the culverts under Route 10 which have a capacity of approximately 1,400 cfs. Any excess water in Trout Brook will flow south along the east side of Route 10 and flow through an 18” culvert (or flood the road) before entering Post Pond.

Evaporative losses from the Pond are a function of the temperature and humidity. These factors are uncontrollable and seasonal in nature.

Clay Brook flows approximately 3.5 miles from Post Pond’s outlet to the Connecticut River. Its 100-year flood discharge at the North Thetford Road bridge is estimated to be 1,820 cfs and is restricted by the bridge’s profile which causes a backup of approximately 10 vertical feet at 100-year flood flows. “Normal” flows are approximately 39 cfs at the North Thetford Road bridge.

Under “normal” conditions, the flow of Clay Brook and the level of Post Pond are affected by several beaver dams. At various times these dams have been built up and/or repaired by active

beaver colonies and breached to various degrees by human intervention. When the beaver colonies are active in the brook close to the Pond, water levels rise when water inflow rates exceed evaporative losses and the flow over or through the dam. When beavers abandon a dam and it is breached, the water level in the Pond may be lower except during high inflows. In May 2004, the Conservation Commission installed a gage near the public boat landing in Post Pond to measure the Pond's relative water level.

In the summer of 2007 the Lyme Recreation Commission engaged Pathways Consulting, LLC. to prepare a design for improvements to the athletic fields in the recreation area at Post Pond. Preliminary information suggests that the water table beneath these fields between Trout Brook and Post Pond may impede subsurface drainage of water from the fields. It is further suggested that the soils that comprise these fields are very poorly drained, compounded by continual compaction and long-deferred maintenance. The study recommends reconstructing the soccer field by removing the topsoil, aerating the subsoil, adding a vertical foot of well-drained soil and replacing the topsoil. Investigators suggest that a water level of 2.0 ft. on the local staff gage could further ameliorate persistent drainage problems.

Determination of Natural Mean High Water Elevation

The State of NH holds the land under a great pond for the public trust, up to the elevation of natural mean high water (NMHWE). NMHWE is determined by observing several physical characteristics along the shore of a water body, which include staining on emergent bedrock or boulders, shoreline scouring and vegetation transitions. In 2004 the Water Resources Division of New Hampshire Department of Environmental Services determined the Natural Mean High Water Elevation (NMHWE) for Post Pond to be 428.8 feet NGVD, or 3.0 feet on the local staff gauge.

Resetting the Gage Stake

There are two secondary bench marks near the Post Pond public boat launch, determined by surveyors of the New Hampshire DES Dam Bureau:

1. The red mark on the west end of the top of the concrete tile in the ditch north of the road is 429.88' elevation NVGD29.
2. The red mark at the east end of the metal culvert at the intersection of the boat launch road and the road to the town recreation area is 429.82' elevation NVGD29.

One of these two secondary bench marks may be used to reset the local gage stake so that 3.00' on the stake corresponds to 428.8 feet NVGD29 water level.

Wildlife

On the north shore of Post Pond (between Route 10, Trout Brook and Clay Brook) is the Town's 21-acre Chaffee Wildlife Sanctuary. The Sanctuary provides food and cover for many creatures, including beavers. Riparian habitat offers a rest stop for birds migrating along the Connecticut River corridor, including arctic terns. Kestrels and bluebirds use the open grassland, and others,

from the red-winged blackbird to the bittern and wood duck, frequent the wetlands. The Sanctuary is managed to achieve the following primary goals:

- protect wildlife habitat and native riparian vegetation, particularly for birds,
- guard water quality in the brooks and pond, and
- provide low-impact public recreational access to wetlands and trails.

Common loons, listed as a threatened species in New Hampshire, are seen regularly on Post Pond during the summer months. The Loon Preservation Committee (LPC) reports that the loon population in New Hampshire is expanding and populating additional water bodies. Loons are unlikely to nest in areas where they encounter repeated disturbance, lack of suitable nesting sites, or substantial fluctuations in the water level during their nesting season (mid-May to early July). However, in 2007 LPC documented a successful nest that hatched at least one chick, probably from a site on or near Little Post Pond.

In 2006 the Conservation Commission, with private support, engaged Normandeau Associates, Inc. of Bedford, NH to prepare a Wetland Evaluation and Impact Assessment for Post Pond. That report, dated December 2006, in summary concludes:

Water level fluctuations in the Post Pond wetland should be kept to a minimum to maintain the current high quality of the vegetation community, wildlife habitat and aquatic diversity of this wetland. Water levels should be maintained at an elevation which supports the current range of plant communities from deep marsh to shrub swamp, and retains the high vegetation-water interspersions that contribute to this wetland's high functional quality. Based on the staff gage, a target water level between 2.0 and 2.5 feet would probably achieve this condition. Some minor fluctuation (0.5 ft +/-) on a natural cycle of spring high water levels and a slow decline over the growing season could be tolerated, and may enhance species diversity and wildlife habitat.

Human Activity

Post Pond is heavily used for recreation including boating, fishing and swimming. The Town's public beach is located on its north shore, a summer lodge/resort on its southeast shore and many private year-round homes and summer camps are along its shoreline. Several of the summer camps are accessible only by boat. There are approximately 25 shore land property owners on the Pond.

Actions Taken to Mitigate High Water Episodes

In 2006 the Town engaged Skip Lisle of Beaver Deceivers International as a consultant on the control of beavers. After reviewing the situation during the summer, in November Lisle installed a "Castor Master" 10" diameter beaver pipe through the controlling beaver dam (downstream site) in Clay Brook. While this installation successfully moved water through the dam, active beavers subsequently re-constructed a previously breached dam at the approximate limit of Little

Post Pond (upstream site) during the spring of 2007. In early summer, Lisle was engaged to install a 12" Castor Master in this upper dam. Together these flow devices helped maintain a water level in Post Pond that fluctuated around 2.5 feet on the local staff gage during the summer of 2007. Continued complaints about the water level at Chase Beach and adjacent playing fields prompted the installation of a second device (12" dia.) in the lower dam. Each of the 3 devices is installed with the bottom of the pipe at a level corresponding to roughly 1.8 ft. on the local staff gage. To better understand the function of these devices the pond's water level will be monitored regularly at the staff gage. Records will be tallied and available at the office of the Select Board. No further installations are anticipated.

In the fall of 2007, the New Hampshire Department of Transportation trapped and removed approximately nine beavers from the Trout Brook area due to their activities posing a threat to Route 10.