



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



October 8, 2003

Mr. Eric Williams
Chairman, Voluntown Inland Wetlands Commission
Town Hall
P.O. Box 96
Voluntown, CT 06384

Dear Mr. Williams:

I am writing to your commission with regard to lakeshore alteration at Beach Pond. As you know, DEP has approved the request of Voluntown First Selectman Thomas H. Wilber for a winter drawdown of Beach Pond. More specifically, a three-foot drawdown will commence on October 20 or shortly thereafter. Please refer to the September 25, 2003 letter from Deputy Commissioner David K. Leff to First Selectman Thomas H. Wilbur (attached).

As you know from our discussions of September 5 and 30, the Inland Fisheries Division has been concerned with shoreline alterations that we understand were effected at Beach Pond coincident with previous winter drawdowns. My purpose in writing is to highlight some of the adverse ecological effects of such alterations, and to encourage your commission to prevent additional shoreline and shallow water habitat destruction at Beach Pond. As we discussed, shoreline maintenance (the stated purpose of the town's request for a winter drawdown) differs from new construction/shoreline alteration. Although the exact details of activities proposed by shoreline residents for this winter are unclear, this office is typically not concerned with shoreline maintenance. Rather, we wish to avoid the adverse habitat impacts resulting from bulkheading, other direct alterations to the shoreline, and "maintenance" that goes beyond simply repairing an existing shoreline or shoreline amenity. Before discussing shoreline alterations I will first provide a brief summary concerning fisheries resource management at Beach Pond.

Fisheries resources of Beach Pond:

Beach Pond is a 372 acre natural lake, though the lake was enlarged somewhat by the construction of a 10 ft high dam (Jacobs and O'Donnell 2002). The Route 165 causeway separates the 346-acre main basin from a 26-acre shallow basin (the shallow basin is largely in RI). Submerged vegetation is rare, though emergent vegetation is common along portions of the shoreline. Beach Pond is subject to heavy fishing pressure, primarily for trout. It is stocked with over 8,000 rainbow and brown trout annually. Walleye fingerlings were first introduced in 2001 to diversify the fishery, and the yearly stocking of walleye fingerlings continues each fall. Other species present include

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largemouth bass, smallmouth bass, brook trout, chain pickerel, white catfish, black crappie, yellow perch, brown bullhead, bluegill, pumpkinseed, golden shiner, banded killifish and alewife (Jacobs and O'Donnell 2002).

Concerns with shoreline alterations:

I toured Beach Pond by boat with Senior Fisheries Biologist Eric Schluntz on September 24, 2003. We observed numerous examples of shoreline alteration along the developed southern shoreline, as well as along the developed northwestern shoreline (i.e. west of the State Boat Ramp). A large percentage of the shoreline in these areas has been converted from a naturally rocky shoreline with vegetated uplands to concrete "seawalls" or bulkheads with extensive manicured lawns and little or no natural upland vegetation (Figure 1). In addition, it appears that in some areas, property has been expanded into the lake, resulting in the direct loss of aquatic habitat at Beach Pond (Figure 2). We believe that over 400 linear feet of new concrete wall was constructed during the last winter drawdown at Beach Pond.

The Inland Fisheries Division opposes the construction of concrete seawalls and solid vertical bulkheads because they eliminate the functions and values associated with natural shorelines. A solid wall provides none of the hiding spaces for small fish and invertebrates associated with either rocky shorelines (what would be expected along the southern shoreline of Beach Pond) or shoreline areas supporting a continual transition from aquatic to upland vegetation. This latter example is typically associated with shorelines that slope gradually to a lake and often include emergent vegetation, marshland or other wetlands immediately adjacent to the lake proper. Though extremely important ecologically, these habitats are naturally absent from the main basin of Beach Pond, thus they will not be discussed further here.

Rocky shorelines not only provide an important refuge area for small fish and other lake life, but they are better able to absorb the energy associated with waves that are generated by storm events or watercraft. Concrete walls and other solid hard shoreline armoring simply deflects wave energy off of the structure, which often leads to localized scouring of the lake bottom. This scouring, in turn, can damage the structure, especially if they are improperly constructed. Repair to concrete seawalls can be difficult, expensive, and if not done with great care, can lead to further loss of lake habitat.

Where shoreline stabilization is required along naturally rocky shorelines, this office recommends the use carefully placed stone, installed without mortar. The crevasses between the stones provide the refuge cover for small fish and other life, and these walls are better able to absorb wave energy than solid walls. Although the use of stone can also lead to encroachment into Beach Pond, this can and should be avoided by requiring excavation prior to filling so that the "new" shoreline does not exceed the waterward limits of the existing shoreline.

It appears that many residents living on the south shore of Beach Pond have installed walls along the shoreline in part, to reduce the slope of their yards leading down to the

lake so as to improve the yards and access to and enjoyment of the lake. I suggest that your commission carefully review all requests for future shoreline alteration, and if the existing shoreline does not have an ongoing or imminent erosion problem, to only approve new walls if they are set back from the lake. If such walls are built back from the lake a few feet, shoreline residents can improve yard slopes without encroaching directly into Beach Pond. If shoreline alteration is being requested to correct erosion problems, then I would suggest the use of carefully placed stones as described above, along with the planting of native groundcovers, shrubs, and trees. Existing concrete walls that may be failing and are proposed for extensive repair represent opportunities for shoreline restoration. I would urge your commission to carefully consider shoreline restoration opportunities as part of your local review process.

Other shoreline issues:

You had also asked about the creation of beaches and the other shoreline maintenance activities such as selective tree removal, and cleaning up tree debris that falls into the lake.

Sand beaches created in areas in which they do not occur naturally (such as along rocky shorelines) are difficult to maintain, as they often wash into the lake when exposed to waves or during rainstorms. This would be particularly problematic along steeper shorelines, where replenishment with new sand would be required frequently. Eroded sand travels into the lake where it can damage aquatic habitat. The more sand that is placed and replenished, the greater the likelihood for aquatic habitat damage. If residents on Beach Pond have an interest in creating beaches, I would suggest that your commission not approve the direct placement of sand into Beach Pond. Rather, it would be prudent to require sand to be placed on uplands adjacent to the lake, but only under conditions where such sand is effectively contained. Suitable containment can be achieved with wooden timbers, stones, or other suitable materials placed downslope and along the sides (if needed) of the placed sand. Containment is obviously more difficult the steeper the slope.

Natural vegetation, including but not limited to groundcover, shrubs, and trees serves several important functions that contribute to healthy lakes. The root structures of these plants penetrate deeper into the ground than do the roots of grasses (i.e. lawns), thus they serve to aid in shoreline stabilization and to reduce the runoff of nutrients (fertilizers) from adjacent lawn areas. Non-migratory Canada geese are a recognized nuisance at some waterbodies in Connecticut, particularly where manicured lawns lead up to the edge of the waterbody (pond, lake tidal river or estuary). A buffer of shoreline vegetation therefore serves to make properties less attractive to these birds. For the reasons described above and to the extent possible, lakeshore residents are urged to maintain a sufficient lakeshore buffer of vegetation along their waterfront. While some breaks in the vegetation are needed for both visual appeal and direct pedestrian access to the lake (i.e. erosion resistant walkways), the complete removal of shoreline vegetation (as seen in Figure 1 for instance) should be avoided. Although various studies and publications have specified a recommended minimum width for vegetated lakeshore buffers, I will not do

so here except to state that it is critical to achieve at least twenty-five feet. The difficulty in restoring developed lakeshore areas is apparent, thus any measures taken by residents to restore upland vegetation along lakeshores should be encouraged. Upon request I can provide more detailed information on the use of appropriate native vegetation for planting along lake shorelines.

Residents typically remove large branches and trees that fall into waterbodies on their property (ponds, lakes, and streams). Unless removal is clearly required for public safety reasons (including navigation safety) or other legitimate concerns, this office recommends leaving the fallen debris in the water. Entire trees and the large branches that fall from them provide good cover for fish and other organisms, and the materials also provide a natural source of "energy" to the lake ecosystem. On the contrary, residents should not dump lawn debris (grass clippings, branches that fall on the ground, etc) into the lake, nor should they cause leaves to be directly blown into the lake during fall yard cleanup activities. In summary, if natural woody debris falls into the water without human intervention, leave it alone, but don't intentionally cause debris to be deposited into the lake.

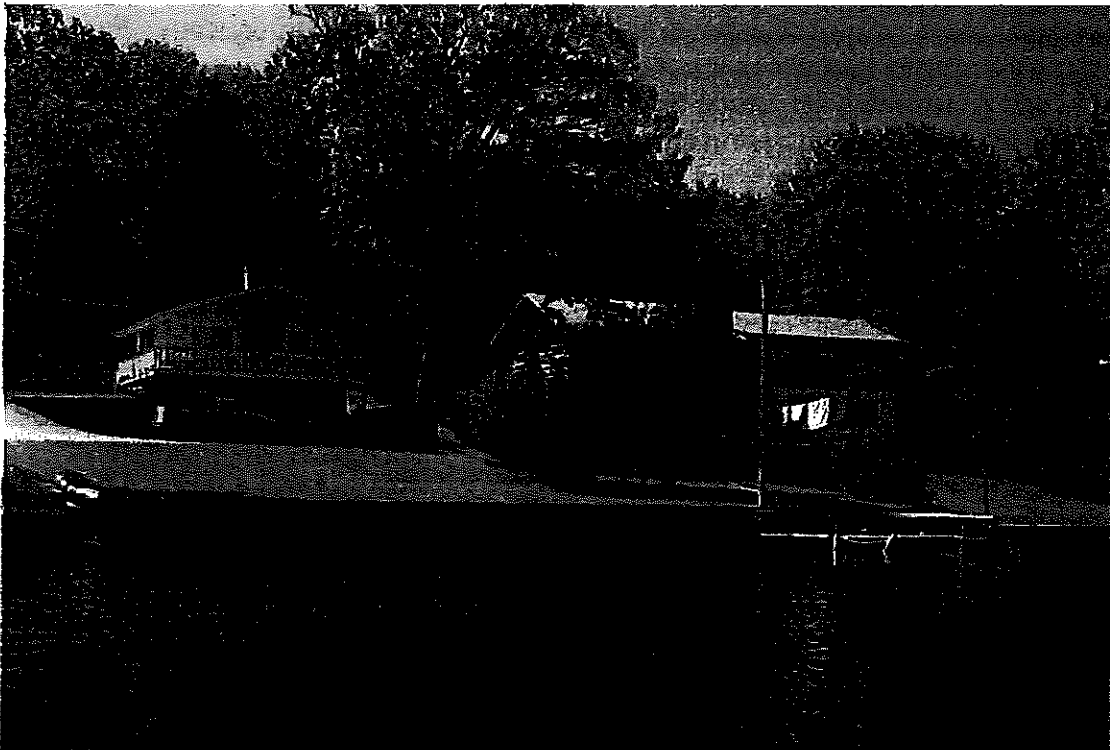


Figure 1. Example of dramatically altered shoreline at Beach Pond, Voluntown, CT. Note concrete "seawall" and complete absence of natural shoreline vegetation. Photo taken September 24, 2003.

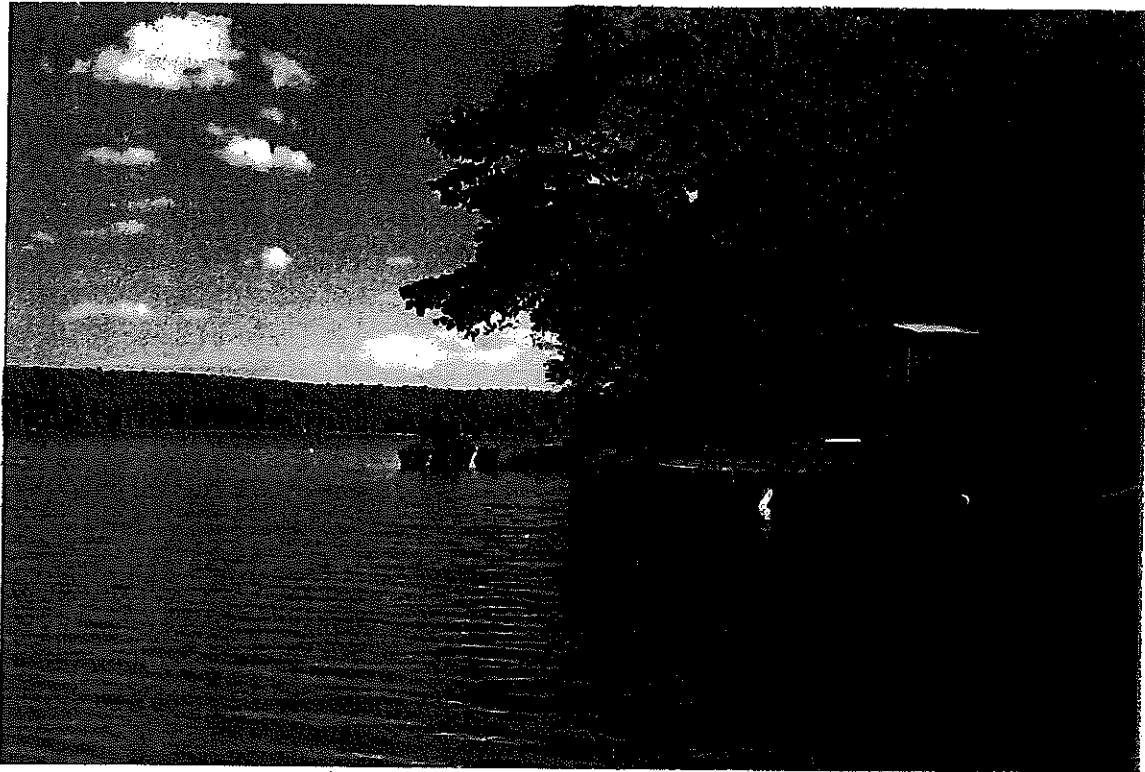


Figure 2. Example of apparent previous filling at Beach Pond, Voluntown, CT (note concrete bulkhead located to the right of watercraft). Photo taken September 24, 2003.

Please feel free to contact me if you have any questions about this letter or to discuss lake habitat management issues. The Inland Fisheries Division's Habitat Conservation and Enhancement Program, per your request, can assist the Voluntown Inland Wetlands Commission in the review of shoreline alteration proposals submitted for local permit review. I can be reached at 860-424-4171 (personal line), 860-424-FISH (office line), or via e-mail at peter.aarrestad@po.state.ct.us Finally, please remember to direct any procedural or technical questions you may have concerning municipal regulation of wetlands and watercourses to Steve Tessitore at the DEP Inland Water Resources Division (860-424-3871).

Literature Cited:

Jacobs, R.P. and E.B. O'Donnell. 2002. A Fisheries Guide to Lakes and Ponds of Connecticut – Including the Connecticut River and Its Coves. Connecticut Department of Environmental Protection. Bulletin # 35. Hartford, CT. 354p.

Sincerely,



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