

Article 7: Motion Three, Restoration of Greenough Dam.

ARTICLE 7 – CPA Annual Recommendations: To see if the Town will vote to act on the report of the Community Preservation Committee and to appropriate or reserve for later appropriation monies from the Community Preservation Fund annual revenues or available funds and to authorize the Board of Selectmen and Conservation Commission to enter into all agreements and execute any and all instruments necessary to acquire, convey, or accept as the case may be, appropriate historic preservation restrictions for historic resources and conservation restrictions for open space, in accordance with Chapter 184 of the General Laws, to be in compliance with the requirements of Chapter 44B, Section 12 of the General Laws of the Commonwealth, or to take any other action related thereto. (COMMUNITY PRESERVATION COMMITTEE)

Motion 3:

I move that the Town vote to act on the report of the Community Preservation Committee for Fiscal Year 2021; and, further, to appropriate Two Hundred Fifty Thousand Dollars (\$250,000) from the Open Space Fund and/or Undesignated Funds to the Carlisle Conservation Commission for the restoration of the Greenough Dam, and that such sums may be expended by the Carlisle Conservation Commission pursuant to the terms of the Town of Carlisle Community Preservation Grant Agreement #2020-001, provided, however, that this approval shall be contingent upon the project receiving a grant from the Commonwealth's Dam, Levee and Seawall Repair Program; and further that any portion of such sums not expended by June 30, 2022 shall be returned to the Community Preservation Historic Reserve Fund and/or Undesignated Funds. (COMMUNITY PRESERVATION COMMITTEE)

Description of Request

The Conservation Commission is applying for a \$1,000,000 grant from Massachusetts Dam, Levee and Seawall Repair and Removal program to repair and replace the Greenough Dam. In order to be eligible for the grant, the Town must provide at least 25% of the award. The CPA request is for \$250,000 in order to qualify for the grant. If the grant is not awarded, the funds will be returned to the CPA fund.

In April 2019 Carlisle received four quotes ranging from \$400,000 to \$700,000. Additional costs include oversight of the project by the project engineer. In order to be fully eligible for the project, the Commission is seeking the match for the total possible award and will return any unused funds to the CPA.

Description of Greenough Dam and Need for Repair

The Greenough Dam was built nearly 100 years ago and is a 300-foot long earthen structure, 6-foot high with two concrete spillways: Spillway #1 and Spillway #2. From 1984 to 1995, Greenough Dam suffered recurring problems and dam failures, requiring substantial stop gap repairs to the earthen part of the structure.

An engineering evaluation required by the Office of Dam Safety on October 20,2000, nearly twenty years ago, determined that the dam was in fair to poor condition and the spillways had inadequate discharge capacity.

The Town and the Conservation Commission undertook some recommended actions, including the funding of a Hydrologic and Hydraulic (H&H) Study and the preparation of design documents. The Carlisle Trails Committee removed the trees to help prolong the life of the dam. The dam has continued to decline. High water has overtopped the dam occasionally causing erosion. Spillway #1 has significantly deteriorated and is now in failure. It has a crumbled and broken concrete floor. The deck's upstream and downstream center-supports and portions of both of its walls are missing are presumed to be downstream toward the Concord River. Spillway #2 has also experienced some decline in the last few years and now requires a new deck.

Three inspection and evaluation reports have been prepared for the Greenough Dam:

1. 2000: Office of Dam Safety - Notice of Inspection
2. "Report of Dam Engineering, Greenough Pond Dam, Carlisle, Massachusetts" SA Project No. 024-01-001, September 1, 2004, Stephens Associates,
3. Tighe & Bond, Consulting Engineers, Environmental Specialists, "Verification In Field (VIF) Inspection", Nat. ID# MA01218, Greenough Pond Dam, Carlisle, to William C. Salomaa, Program Manager, DCR Office of Dam Safety (7/2/2006).



Underside of Spillway #1.

The dam's effective lifetime is coming to an end. If the Greenough Dam is not repaired soon, Carlisle can expect dam failure of modest to severe proportions in the not-too-distant future.

Consequences of Dam Failure.

The Greenough Dam is located within Carlisle's largest Town-owned conservation land, the 242-acre Greenough Land, which is part of a 742 acre conserved area. The dam impounds Greenough Pond, which at 21 acres is the largest pond in Carlisle. The Pond is fed by Pages Brook and discharges to the Concord River and provides important wildlife habitat as well as recreational opportunities.

The pond provides recreational opportunities including fishing, ice fishing, canoeing and kayaking, bird and other wildlife observation, skating and pick-up games of hockey. Parents and young children are seen fishing from the dam itself.

The dam structure also provides a critical link in the Carlisle trail system allowing hikers from the Greenough Conservation land area to the north of the dam a trail access to several hundred acres of protected public land located south of the dam to and including Foss Farm. The trail over the dam is used year-around for hiking, trail biking, X-C skiing and snowshoeing both by individuals and by organized outing groups. Without the dam in place, trail users will need to travel along Maple Street to reach trail heads located below the pond.

Complete failure of the spillway could be catastrophic and result in the loss of the pond and an unknown amount of silt washed downstream causing significant environmental damage and expensive clean-up costs in a sensitive and difficult area to access. Reconstruction of the dam, even if possible, would require a redesign and re-permitting. Without a dam in place, the only way to continue the trail connections in the area would be with a robust bridge needing expensive design, permitting and funding to cross a FEMA Floodway and designed to be above flood stage of the Concord River itself.

The pond also is significant for protection of many species of wildlife and also two state-listed rare species, one of which, a plant, located downstream, could be extirpated by a catastrophic failure of the dam.

There is a significant possibility that a large rain or spring runoff events could cause a major breach in the dam and loss of the pond, important hiking and walking trail connections, a long-term state monitoring project for wood ducks, treasured and historic vistas, and lead to the destruction of wildlife habitat for threatened and non-threatened species alike.

Environmental, Recreational and Historical Impacts Resulting from Dam Failure

The purpose of this project is to prevent the many adverse impacts of dam failure.

Greenough Pond is considered a Historic Landscape by the Massachusetts Historical Commission, and the loss of this landscape would be significant for Carlisle as it is the largest

town-owned pond in Town and is located in an aesthetically pleasing woodland/agricultural setting. The rural vistas and wildlife found here are unique.

Loss of the associated aquatic and waterfowl habitats

Loss of the pond would essentially eliminate the aquatic habitat which does support several fish species. Waterfowl habitat for geese, wood ducks, mergansers, herons and others would be mostly lost. The Greenough Pond has, for 48 years, been part of the State-sponsored MA Fish & Wildlife Wood Duck Study Program. This 50-site program includes the placement of breeding boxes for wood ducks (and hooded mergansers), which continues to be monitored annually.

To get a true feeling for the diversity and beauty of the Greenough Pond wildlife and its habitat is to watch the six-minute video, “The [2019] Pond Report”, created by Harvey Nosowitz who lived adjacent to the Pond. The video, released on January 1, 2020, shows wildlife scenes throughout the year at the Pond.

<https://pondreporter.blogspot.com/2020/01/2019.html>

Project Scope and Key Tasks for Dam Repair

The dam project includes installation of a permanent coffer dam located pond side at Spillway #1 to keep the pond in place during construction and for future stabilization of the structure. Spillway #1 is to be replaced by three, side by side box culverts set at different elevations to improve discharge capacity. Spillway #2 is to receive a new deck. The downstream slope of the dam is to be cleared of brush and any saplings and trees that have become re-established, regraded, loamed and seeded. To compensate for impacts to wetland resource areas two small replication areas need created. Carlisle has all the permits required for the project.