Natural Resources
Town of Harwich
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12 May 2022

To: Community Preservation Committee
From: Heinz Proft, Natural Resources Director
RE: May 12th, Hinckley's Pond Remediation & Public Access project update

Hinckley's Pond Remediation & Public Access Project, 2018 Article #57

Project Budget: $650,000
($575,000 for pond treatment/monitoring + $75,000 Public Access portion)

Committed Expenses: $4,000 spent on NHESP filing fee.
$347,300 Treatment of Hinckley's Pond, Solitude Lake Management
$37,638 pre-treatment, during treatment, + first year monitoring
$15,876 2021 required additional water quality monitoring

Pond Treatment/Monitoring - $575,000 (remaining balance = $245,186)
Public Access portion - $75,000(remaining balance = $75,000)

The landside work will be summarized by the Conservation Agent.

Project summary & current condition of Hinckley's Pond (Water Resource Services/excerpt)

Water clarity was substantially increased by aluminum application in September 2019, remained high in May 2020, then declined during summer as non-cyanobacterial algae accumulated in the water column. Clarity further declined in fall after cranberry bog harvest with subsequent discharges to the pond. Clarity in May 2021 was improved over late 2020 but was not as high as just after treatment or May 2020. Clarity declined during summer 2021 and increased somewhat going into fall, with only the smaller of two cranberry bogs active in 2021. Overall, the post-treatment average Secchi transparency was 3.9 m, compared to the pre-treatment average of 1.6 m. While post-treatment clarity is not as high in Hinckley's Pond as some other treated ponds on Cape Cod, it is consistent with clarity achieved in ponds that serve as alewife nurseries. Alewife decimate the zooplankton community when present in a pond, leading to the highest possible phytoplankton biomass attainable for the level of fertility (mainly related to phosphorus concentration) in the pond.

Chlorophyll-a, an algal pigment indicative of the amount of algae present, averaged 14 to 33 µg/L in shallow, mid-depth, and deep water layers over 15 years prior to treatment but was reduced to 4.5 to 6.5 µg/L for the two years following treatment, a decrease of 64-86%. No significant amounts of cyanobacteria were observed in any sample since treatment. The disconnect between indicators of algae abundance, water clarity, and phosphorus suggests that other sources of turbidity may be important (e.g., resuspended sediment or bog inputs) and that much of the phosphorus in the water column is not readily available for use by algae. Additionally, the shift in types of algae represents a shift in particle size distribution that affects clarity independently of any change in abundance.

As a consequence of alewife being in Hinckley's Pond for the summer the zooplankton community declines in biomass and mean size to minimal levels from June through September and provides no significant grazing pressure on algae. Summer loss of clarity is therefore related mainly to an accumulation of generally desirable algae types that are not hazardous to people but are not being processed efficiently in the food web. Water clarity has increased and cyanobacteria no longer dominate in Hinckley's Pond, so conditions are much improved from the perspective of human lake users, with increased enjoyment expressed by swimmers, boaters and fishermen.

Ongoing assessment of water quality in Hinckley's Pond is strongly recommended and continuation of volunteer monitoring efforts in Harwich is perceived as largely sufficient for tracking conditions and further evaluating the results of the phosphorus inactivation project.

There are some oddities with regard to P concentration over time, and the clarity did not improve as much as in treated lakes without alewife, but clarity is improved and there have been no issues with cyanobacteria since treatment. Overall, the pond is in much better condition and users are happy. Continued monitoring, presumably under the Harwich volunteer program and PALS, is advised.