



## Assawompset Pond Complex Floodwater Management Program 2020

### HYDROLOGICAL AND HYDRAULIC STUDIES

#### Priority Action Next Steps Summary

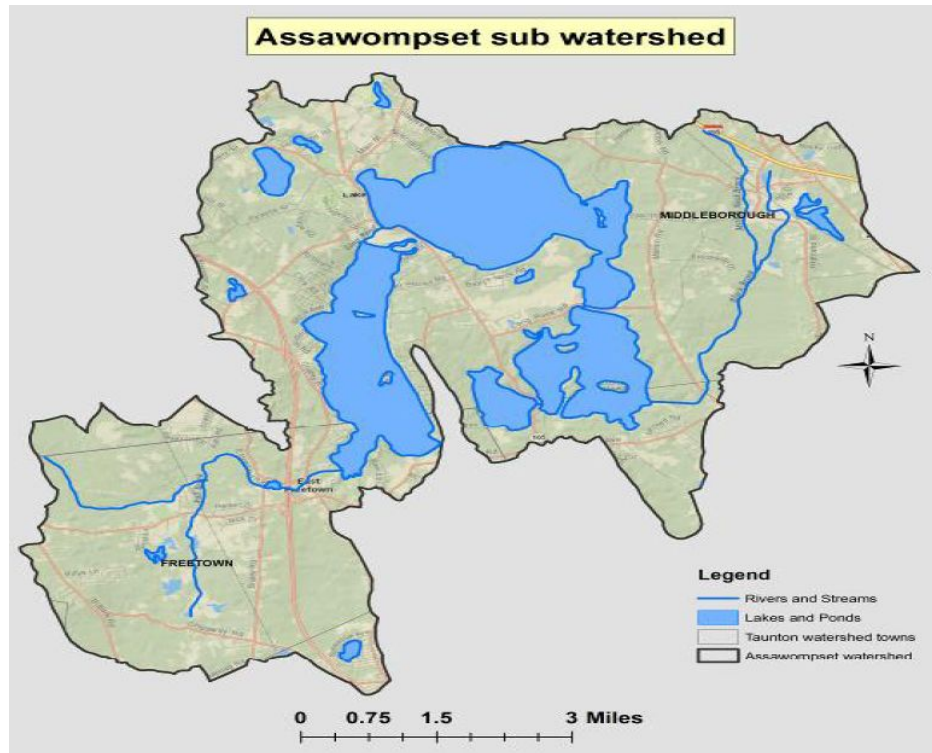
**Where:** The Assawompset Pond Complex and Nemasket River

**What's the problem:** No hydrological and hydraulic (H&H) models of the Assawompset Pond Complex (APC) or the Nemasket River currently exist. In 2010, Professor Neil M. Fennessey of UMass Dartmouth produced an analysis of the historic water level range of the Assawompset Pond, and recommended that a long-term hydrological study would be key to the planning and decision-making process.

Several other projects recommended by the APC Management Team require the use of H&H models to properly evaluate project objectives and design parameters. This study is a necessary first step to inform those other projects.

Projects requiring a H&H model include Assawompset Pond Dam removal or replacement, dredging and installing a silt trap at the headwater of the Nemasket River, repairing or replacing the Wareham Street Dam, and replacing undersized culverts throughout the Taunton River Watershed. H&H modelling is also a necessary step in water supply management planning.

**What's the solution:** Develop one or more long-term H&H model(s) of the APC, Nemasket River, and contributing watersheds. These models may include groundwater, surface water, and/or linked modeling approaches. Possible modeling tools may include MODFLOW, HEC-RAS, HSPF, and others. Use the model(s) to establish firm yield and reservoir management operating rules for the APC, and to model the dams along the Nemasket to





evaluate dam design and operating rules. Design the model to be applicable to scenario-based questions for possible interventions along the Nemasket River.

**Who:** Towns of Lakeville, Middleborough, Freetown, Rochester, Taunton, and New Bedford; APC Management Team; SRPEDD; USGS; local environmental non-profits; civil/environmental/water resource engineers.

**Steps to complete work:**

1. Review existing data
2. Collect new field data from APC, Nemasket River, and contributing watersheds as needed
3. Develop H&H model(s)
4. Identify scenarios of interest
5. Run model(s) and evaluate outcomes of different scenarios

**Permits required:** None

**Assets and barriers:** Assets include existing data collected by Dr. Fennessey and existing data about water surface levels and withdrawals from ponds . Barriers include the complexity of the APC system and anticipated expense of this study.

**When would we see results:** 2-4 years

**How much (ballpark costs):** \$200,000-\$400,000

**Funding sources:** MVP Action Grant, SRF Loans, SNEP, FEMA HMP Grant?, surrounding municipalities

**Similar Example:** Silver Lake Watershed, Monponsett Ponds.