

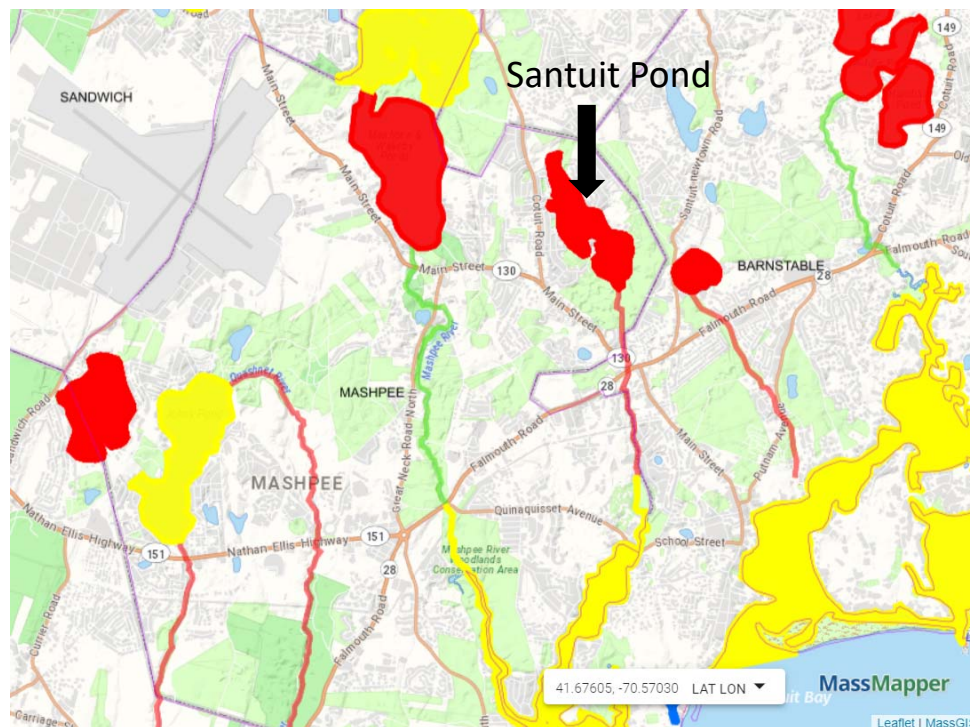


Mashpee Municipal Bylaw Review and Recommendations

Watershed-based Solutions to Increase Resilience to Harmful Algal Blooms in Santuit Pond in a Warmer and Wetter Climate

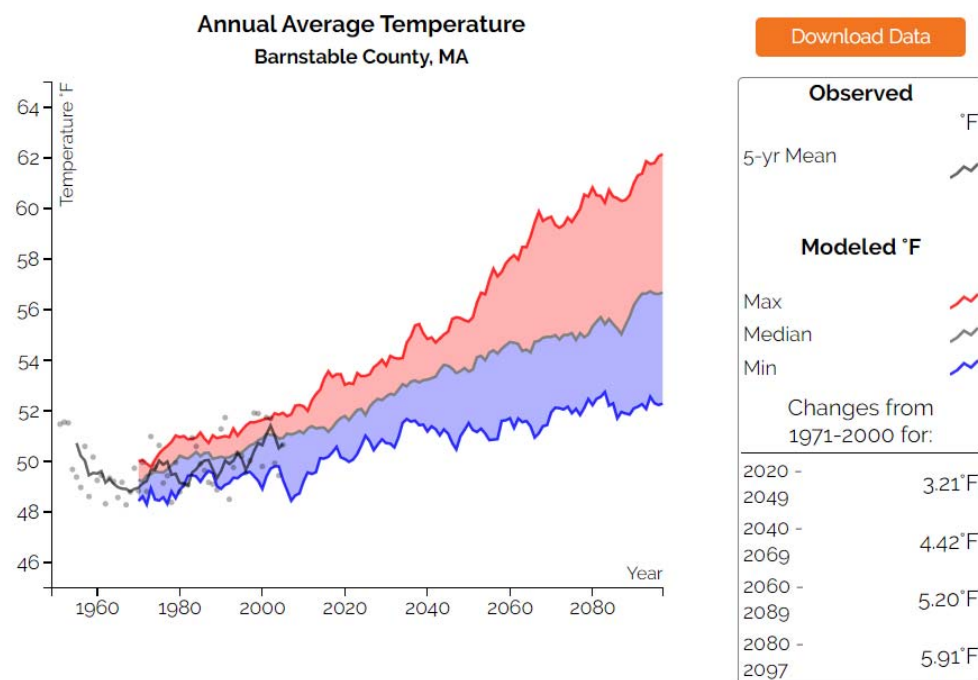
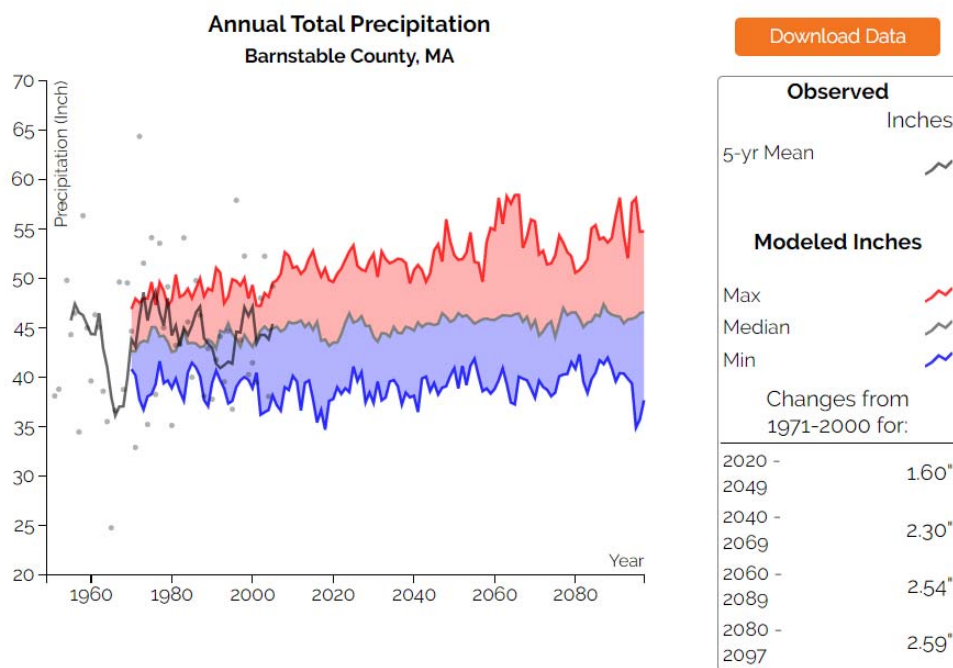
Protecting Mashpee's Ponds
April 15, 2022

Santuit Pond & Other Mashpee Waterbodies



- 2 - Attaining some uses; other uses not assessed
- 3 - No uses assessed
- 4A - TMDL is completed
- 4C - Impairment not caused by a pollutant
- 5 - Waters requiring a TMDL

Climate Change & Impacts to Water Quality



Climate Change Impacts

- Increased runoff
- Increased stormwater and nutrient loading to waterbodies

- Increased water temperatures
- Potential increase in conditions favorable for harmful algal bloom

Resources Reviewed – Mashpee

- Chapter 107 - Nitrogen Control Bylaw, Mashpee General Bylaws
- Mashpee Water District Irrigation Policy
- Chapter 84 - Erosion and Sedimentation Control, Mashpee General Bylaws
- Chapter 85 – Illicit Connections and Discharges to the Municipal Storm Drain System, Mashpee General Bylaws
- §174-27.2 Stormwater Management, Mashpee Zoning Bylaws
- Chapter 172 – Wetlands Protection Bylaw, Mashpee General Bylaws
- Chapter 172 – Wetlands Protection Regulations
- Boating in Mashpee Rules and Regulations

Resources Reviewed – Other Municipalities

- Town of Falmouth Nitrogen Control Bylaw
- Town of Harwich Fertilizer and Nutrient Control Regulation
- Town of Brewster Fertilizer Nutrient Control
- Town of Orleans Fertilized Nitrogen and Phosphorous Control Bylaw
- Town of Duxbury Conservation Commission Wetlands Protection Bylaw
- Town of Hingham Wetland Regulations
- Town of Scituate Wetlands Protection Rules and Regulations
- Metropolitan Area Planning Council Climate Resilient Land Use Strategies
- Neponset River Watershed Association Model Stormwater Bylaw
- Northern Middlesex Stormwater Collaborative's Model Stormwater Bylaw and Regulations
- MassDEP Model Water Use Restriction Bylaw

Recommendation Categories



Nutrient Source Control

- Reduce nutrients before potential to enter surface or groundwater



Stormwater Management

- Minimize erosion and reduce runoff potential prior to reaching surface waters



Water Conservation

- Reduce amount of water used for irrigation to minimize potential transport of nutrients

Nitrogen Control Bylaw



Nutrient Source Control



- Adopted in 2015 to regulate fertilizer use on residential lawns and reduce N loadings to surface waters and groundwater
- Amended in 2017 to address phosphorus (freshwater lakes and ponds)
- Prohibits use of fertilizer containing N or P outside of growing season
- Other use restrictions (impervious surfaces, near wetlands, within 24 hours of heavy rain)

Recommendations – Nitrogen Control Bylaw



Nutrient Source Control



- Specify an amount of nitrogen fertilizer required as slow release (>20%) and annual rate (<1 lb per 1,000 SF)
- Add language referencing that a subdivision plan shall comply with loading rates from lawn fertilizer as specified in the Zoning Bylaws (§174-27)
- Require a Certified Fertilizer Applicator to submit soil test results, type and amount of fertilizer, and an irrigation plan for approval by the Enforcement Authority for fertilizer application to lawn greater than a specified area

Recommendations – Nitrogen Control Bylaw



Nutrient Source Control



- “Nutrient Control Bylaw” – Change the name of the Nitrogen Control Bylaw to more broadly reflect nutrient control, including phosphorus
- Include some exemptions in revised bylaw
 - Gardens, Agriculture, First Growing Season, etc.
 - Do not include exemption for golf courses
- Add new performance standards to §107-4
 - Minimize or prohibit outdoor storage of fertilizer
 - Specify type of nitrogen and application rate for existing and new lawns

Recommendations – Zoning Bylaw



Nutrient Source Control

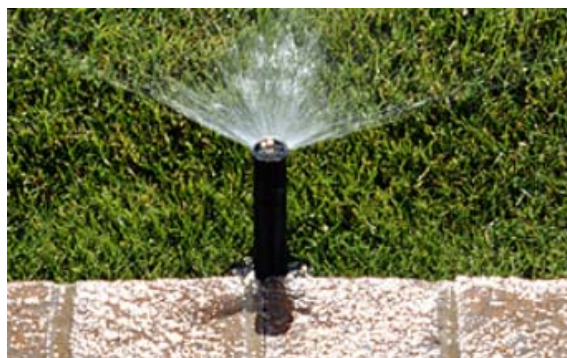


- Application of fertilizer containing N or P currently prohibited within Groundwater Protection District
- Expand prohibition to within 100 feet of the Groundwater Protection District to further protect public water supplies

The map displays the Mashpee, MA area, highlighting the Ground Water Protection Districts (GWDs) and the Mashpee Boundary. The GWDs are color-coded: blue for the Mashpee GWD and yellow for the Santuit GWD. The Mashpee Boundary is indicated by a pink line. Key locations labeled include Forestdale, Farmersville, Barnstable, Wakeby Pond, Newtown, Ma, Santuit, Mashpee, Cotuit, Mashpee Neck, Popponesset Bay, Waquoit Village, New Seabury, East Falmouth, Monomoscoy Island, Popponesset, Maushop Village, Washburn Island State Park, Teaticket, and Davisville. Major roads shown are 130, 151, and 10. A red box highlights the area around Santuit Pond, which is shown in a larger inset map on the right. The inset map shows Santuit Pond, Mashpee Pond, and various roads including Main St, Echo Rd, Heritage Park, Johnson Rd, and others. A legend at the bottom right defines the symbols: a blue triangle for 'Ground Water Protection District', a yellow triangle for 'Parcel Lines', and a pink line for 'Mashpee_Boundary'.

Water District Irrigation Policy

Water Conservation



- Prohibits new Water District customers from connecting automatic outside irrigation to District water service
 - Must use private well to supply irrigation system
- Existing customers who use automatic outside irrigation
 - Recommends water conservation measures (rain sensors, low flow heads)
- Existing customers with private well required to use well for irrigation
- Voluntary outdoor water use restriction

Recommendations – Water District Irrigation Policy

Water Conservation



- Consider Adopting an Outdoor Water Use Bylaw
 - Strengthen enforceability
 - Expand applicability to private well owners and areas outside of Water District
 - Standards for in-ground irrigation systems
 - See DEP model bylaw
- Consider amending Zoning Bylaw to Require Submission of Irrigation Management Plans with Proposed Developments

Illicit Connections & Discharges to Municipal Storm System



Nutrient Source Control

- Adopted bylaw in 2020, required by MS4 Permit
- Include improper disposal of pet waste in section 85-7 Prohibited Activities
 - Pet waste source of bacteria and nutrients



Stormwater Management



Stormwater Management

Stormwater Management



A bioretention practice in a suburban road median, capturing stormwater during a rain event.

Photo Credit: Image reproduced with permission from Montgomery County, MD Department of Environmental Protection

- Adopted bylaw as part of Zoning Bylaw in 1999
- Amended in 2000, 2007, and 2021 (MS4 Permit)
- New residential or non-residential development requiring Planning Board approval
- Requirements for stormwater treatment and recharge consistent with DEP Stormwater Standards and Handbook

Recommendations – Stormwater Management



Stormwater Management



A bioretention practice in a suburban road median, capturing stormwater during a rain event.

Photo Credit: Image reproduced with permission from Montgomery County, MD Department of Environmental Protection

- Consider adopting stand-alone stormwater regulations
 - Greater flexibility in making changes to requirements
- Require BMP designs that optimize N and P removal
 - Specialized filter media
 - Internal water storage zone
- Design BMPs for changing climate
 - Updated design storm precipitation
 - RMAT Climate Resilience Design Standards & Guidelines

Wetlands Bylaw and Regulations



Nutrient Source Control

- Adopted bylaw in 1988, last amended in 2018
- In addition to MA Wetlands Protection Act
- Regulates activities within wetland resource areas



Stormwater Management

Recommendations – Wetlands Bylaw and Regulations

Nutrient Source Control



Regulation 31: Nitrogen Loading/Lawn Standards

- Prohibit application of fertilizer containing N or P within wetland resource areas (includes buffer zone)
- Eliminate provisions no longer applicable:
 - Fertilizer provisions, vegetated berm, and annual reports
- Keep applicable provisions:
 - Lawn area limits, depth of loam, lawn alterations, lawn clippings, new or expanded lawns

Recommendations – Wetlands Bylaw and Regulations



Stormwater Management

- Consider increasing the existing 100-foot Buffer Zone to 150 feet
- Consider increasing naturally vegetated buffer strips (NVBS) from the minimum of 50 feet to at least 50% of the Buffer Zone width



Recommendations – Wetlands Bylaw and Regulations



Stormwater Management



- Specify tree-replacement requirements within the Buffer Zone
- Require a base fee to replace a tree within the Buffer Zone if site conditions do not allow for mitigation tree planting
- Limit impervious area allowed within Land Subject to Coastal Storm Flowage (LSCSF)

Proposed Stormwater Management Requirements

1. New residential construction or improvements to existing residential lots in wetland jurisdiction

- a. Contained within the Wetlands Bylaw/Regulations
- b. Administered by the Conservation Commission
- c. Focus on non-structural site planning and design and small structural LID practices on residential lots

2. Projects subject to approval by the Planning Board

- a. Contained within the Zoning/Stormwater Bylaw and associated Stormwater Regulations
- b. Administered by the Planning Board
- c. MA Stormwater Standards and Handbook and additional requirements

Recommendations – Boating in Mashpee Rules & Regs

General Recommendations



- Restrict boat use to minimize turbidity and avoid resuspension of bottom sediments
- Applicable to Santuit Pond and other designated waterbodies
- Prohibit the use of motorboats, limit the speed of motorboats (< 5mph), or limit horsepower of motorized boats
- Exception for boats owned by an agency of the United States Government or by a State, County, City, or Town

Questions & Discussion

