Broad Meadow Brook Restoration:

Achieving Ecological Outcomes in an Urban Headwaters

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Goal

Achieve a dynamic, diverse, and self-sustaining stream and wetland ecosystem that provides a full suite of ecosystem services, accessible for the benefit and enjoyment of neighbors, residents, and visitors

From Stressors to Solutions

- Adjacent neighborhood, including Environmental Justice communities, subject to flooding
- Earthen berm causeway built to house decommissioned municipal sewer main disrupts hydrological connection
- Wetland complex dominated by invasive *Phragmites*
- Brook piped through buried culvert prevents riparian connection and stream habitat

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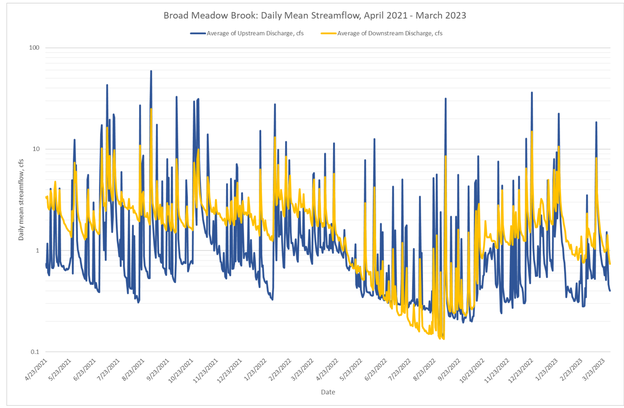
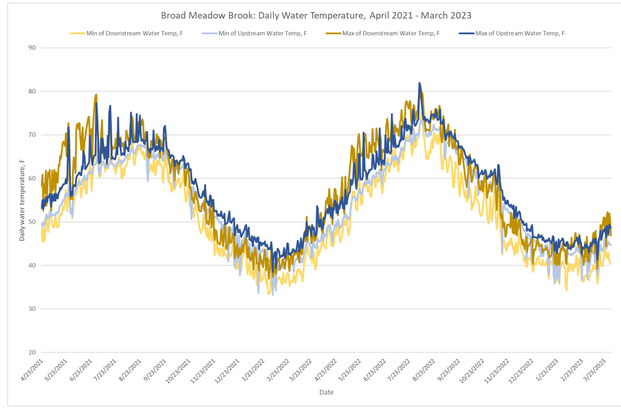
- Increase flood storage and wetland function
- Remove select portions of causeway to allow brook to meander across wetland and floodplain
- Remove and manage invasive species
- Enhance habitat for fish, turtles, birds, and invertebrates
- Daylight brook and re-grade banks to provide riparian connection
- Provide new and enhanced visitor experiences through revitalized trail network and viewing platforms

Ground view (top) and aerial view (bottom) showing intact wetland on left; channelized brook and causeway in center; and *Phragmites*-dominated wetland on right.

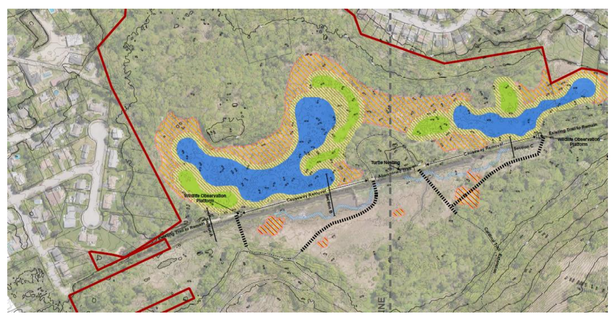
Stormwater-Driven Streamflow: Flashy and Hot



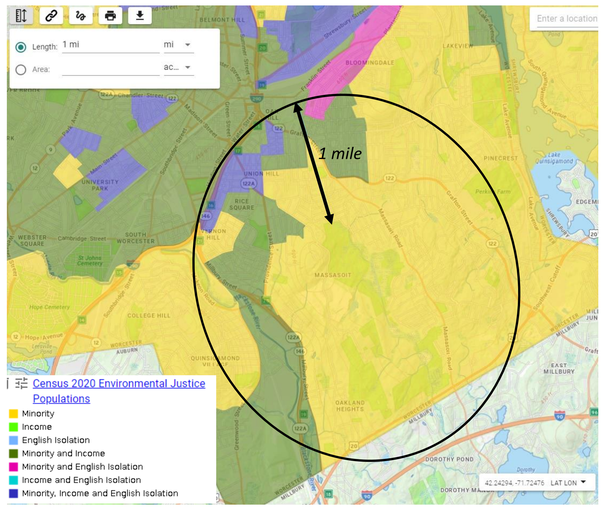


Continuous streamflow and water temperature data collected at gaging stations established along Broad Meadow Brook at the inflow to and outflow from the proposed restoration area. Streamflow data show flashy hydrology highly driven by stormwater inputs after rainfall events. Warm water within the Brook frequently exceeds thermal tolerances for most freshwater fish and invertebrates.

Restoration Planning



Preliminary design concept including partial removal of earthen berm causeway, re-routing of trail network, and enhancement of wetland community types



Numerous Environmental Justice communities live within proximity of the BMB Wildlife Sanctuary and proposed restoration area

Project Timeline *(anticipated)*

2020	2021	2022	2023	2024	2025	2026	2027
ASSESSMENT: topographic survey, biotic surveys, hydrologic & hydraulic modeling, wetland delineation, geotechnical investigation, historical review, etc.							
		DESIGN & ENGINEERING: restoration options, alternatives analysis, conceptual design, permitting-level design, final design, etc.					
					PERMITTING: MEPA, NOI, NHESP, Sec 401, Ch 91, Sec 404, Sec 106, etc.		
							IMPLEMENTATION *(phased)*
OUTREACH & ENGAGEMENT *(ongoing)*							

Inflow from stormwater system

DER staff measure streamflow

Flood event in December 2021

Drought conditions in August 2022