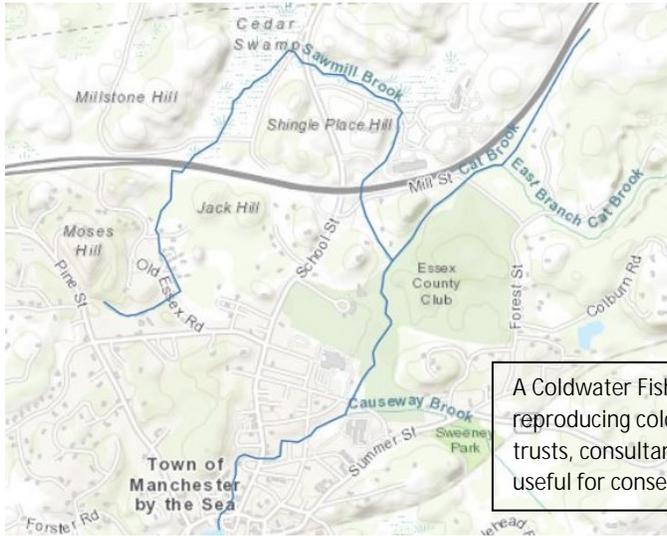


Dear Zoning Board of Appeals,

July 26, 2022

The only brook trout (*Salvelinus fontinalis*) known to occur in a coastal stream in the greater Boston area were recently documented in the Sawmill Brook watershed in Manchester. Their presence was detected using environmental DNA (eDNA) sampling and the positive finding of trout eDNA was confirmed by the Massachusetts Division of Fisheries and Wildlife when they electroshocked fish in 2019 and again in 2022. I was there both times to assist, and we saw trout of various sizes, indicating that they are reproducing in this watershed. Sea-run brook trout were once widespread in streams along the northeastern United States coastline, but their populations have been decimated by manmade changes to their habitat. Currently, only two coastal stream areas in Massachusetts are known to contain brook trout, of which one is in Manchester (and the other includes a few Cape Cod streams). Sawmill Brook



was recently designated as a Coldwater Fish Resource to afford the watershed some protection, and, along with the adjacent and connected Cat Brook in Manchester, is the only coldwater fish resource in the north coast district, which includes coastal towns from Revere to Newburyport. The Sawmill Brook watershed is currently protected under the Massachusetts Surface Water Quality

A Coldwater Fish Resource (CFR) is a stream, river, or tributary in which reproducing coldwater fish are found. Conservation/planning commissions, land trusts, consultants, and town open space committees will find this information useful for conservation planning. The CFR is shown in blue on the map.

Standards (MA SWQS) as a presumed high-quality water (314 CMR 4.06(4)), and the MA SWQS regulation protects the fish population and its habitat as an existing use (314 CMR 4.06(1)7). Work is underway to also classify Sawmill Brook as an outstanding freshwater resource. The trout (and smelt) habitat of the Sawmill Brook watershed will be improved by the proposed changes to the Central Street tidegate and surrounding area. It may be possible to use some of the sea-run brook trout from Sawmill Brook to repopulate the once widespread fish into rehabilitated Massachusetts streams.

Sawmill Brook and associated vernal pools are adjacent to the proposed SLV development. Changes to the habitat in this sensitive area pose a threat to the trout population. Trout require clear cool water with a high level of dissolved oxygen. A development near the stream is likely to change the parameters that make the stream suitable for trout. The stream is fed by spring water and naturally filtered runoff. The habitat is kept cool by tree cover and other vegetation. Adequate vegetation filters sediment, excess nutrients, and other contaminants. Natural vegetation along the stream provides necessary habitat for invertebrates and appropriate levels of algal growth. Coldwater fisheries are highly sensitive to thermal pollution and changes in water runoff. The effects of vegetative buffers around streams have been extensively studied (reviewed in Sweeney and Newbold 2014). Buffer widths of greater than 30 meters have been found to be most effective at providing buffer functions, including erosion control, nitrogen removal, and thermal stability. Buffer widths should be even wider along small streams with sloped banks; small streams are more susceptible to temperature change. The SLV development proposes clearcutting and road placement ranging from 9 to 20 meters from the boundary with Sawmill Brook and its vernal pools. A much larger border of natural vegetation is necessary. Additionally, changes to hydrology, topography and sedimentation due to the development may impact the stream and its water sources (for example, Hartman and Hakala 2006). Changes to upgradient groundwater recharge zones have been shown to affect seepage temperature dynamics (Briggs et al 2018). Similarly, natural surroundings are important for maintaining suitable vernal pool habitat.

The unique presence of sea-run brook trout serves as an indicator of the current high quality of the Sawmill Brook watershed. The degradation of this healthy watershed would eliminate one of the last remaining coastal populations from the brook trout's gene pool, the only Massachusetts population known north of Cape Cod; studies of trout from different streams have shown that populations are genetically distinct (for example, Beer et al 2019). Sawmill Brook may look like many other streams, but it is an important refuge of biodiversity for species that have been eliminated by development almost everywhere else.



One of the small trout in Sawmill Brook, August 2019. Trout of a several age classes were seen, including large trout.

Sincerely,

Lynn Atkinson
62 Pine Street, Manchester

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Member of the Manchester Coastal Stream Team, a town committee, since 2011
Trustee of the Manchester Essex Conservation Trust since 2010
Member of the Water Resources Protection Task Force, 2022

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