Flooding Prediction for Your Community: The Charles River Flood Model is Now Live

The Town of Franklin, in partnership with the Charles River Watershed Association (CRWA) and 14 other communities in the upper and middle Charles River watershed, is excited to announce the release of the Charles River Flood Model (CRFM). Funded by the MA Executive Office of Energy and Environmental Affairs FY21 MVP Action Grant Program, and developed by Weston & Sampson, this flood model can help communities protect vulnerable populations and property from flooding.

The Charles River Flood Model visualizes the impacts of increasingly severe storm events that will become more common with climate change, then shows what happens if we invest in nature-based solutions such as land conservation, green stormwater infrastructure, and/or reducing impervious surfaces.

This model comes at an important time. Our region has seen approximately 9.5" of rain so far this month, an astounding 9" more than average for early July. Following Tropical Storm Elsa and subsequent rains; the Charles River remained above flood stage in Dover from July 12th to 17th according to the U.S. Geological Survey.

The Charles River Flood Model found that without intervention, a projected 2070 100-year storm will impact more than 50 critical facilities and flood up to 12,500 acres of land within the watershed. This exceeds the estimated 10,400 acres of flooding during the severe rains of March 2010, which is the most recent significant flooding event caused by rainfall to affect the region. These intense rain events will put many residents at risk, especially vulnerable populations such as low-income residents, the elderly, and those who suffer from physical or mental illness.

The model was also used to test the impact of developing land that is currently undeveloped but vulnerable to future development. Developing half of the watershed's remaining undeveloped and unprotected land without flood control measures would result in a 33% increase in flooded area in the present day 10-yr storm, and a 20% increase in flooded area in the 2070 10-yr storm. Allowing undeveloped land to be developed without considerable flood protection will cause downstream flooding and directly impact vulnerable residents.

"CRWA is excited to have led this regional effort," said Julie Wood, deputy director with the Charles River Watershed Association. "This is a critical step to taking action as a region to effectively mitigate the expected flooding impacts of climate change. The model provides valuable information that will allow communities to make informed decisions about policy changes and on the ground interventions".

Investing in nature-based solutions brings other important co-benefits as well, including improvements in water quality in the Charles River, reduced heat island effect, cleaner air, increased biodiversity, and more.

Flooding does not follow political boundaries, and this tool will help create stronger regional collaboration between communities in the watershed to better understand and address flooding due to climate change. Participating communities include Arlington, Dedham, Franklin, Holliston, Medway, Millis, Natick, Needham, Newton, Norfolk, Sherborn, Watertown, Wellesley, Weston, and Wrentham.

Charles River Watershed Association uses science, advocacy, and law to promote resilient communities and a healthy river ecosystem. CRWA was formed in 1965 in response to public concern about the declining condition of the Charles River. Since its earliest days of advocacy, CRWA has figured prominently in major clean-up and watershed protection efforts that have dramatically improved the health of the Charles.

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