

Towns work to identify, eliminate bacteria in river

By **David Kaplan**/ Special To The Tab

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The Charles River's Lower Basin is one of the most heavily trafficked recreation waters in Massachusetts, supporting thousands of boaters daily in peak summer months. Despite marked improvement in the river's water quality from 1995, bacteria levels sometimes exceed Massachusetts' standards for safe swimming and boating.

Illicit connections of sanitary sewer pipes to stormwater pipes are a significant source of bacterial pollution and can discharge untreated sanitary waste into the Charles River even in dry weather. "Federal policy requires towns to initiate stronger and more vigilant illicit connection detection and elimination programs," said Anna Eleria, environmental engineer at Charles River Watershed Association. "Watershed towns have responded with action plans to step up their efforts to reduce bacterial pollution in their water bodies."

Eleria cited work in Newton and Brookline involving water sampling and dye testing within the stormwater infrastructure to pinpoint potential sources of wastewater and remove the connections to the stormwater system.

According to Newton's quarterly report to the US EPA, the overseeing body, on their progress in detecting and eliminating illicit connections, the city is in the process of mapping and sampling stormwater catch basins and outfall locations to determine areas of concern for future analysis and action. In their report, Brookline officials estimate that nine illicit connections and nearly 3,500 gallons per day of wastewater flows have already been removed from the stormwater drainage system.

The Charles River also receives bacteria and other pollution from raw sewage released from combined sewer outfalls during heavy rain events. Combined sewers are antiquated systems originally designed to collect and convey a combination of both stormwater and sanitary wastewater directly into a lowland waterbody.

The Massachusetts Water Resources Authority collects combined wastewater in interceptor pipes and pumps it to the Deer Island Wastewater Treatment Plant in Winthrop. To prevent sewers from backing up into homes, combined sewer overflows are activated when inflow exceeds the treatment plant's capacity, dumping millions of gallons of treated and untreated sewage into the river each year.

Boston and Cambridge still have combined systems and are working towards their eventual separation, which will reduce inflow to the treatment plant and decrease the frequency of CSO discharges. Cambridge recently separated sewerage in the Cambridgeport area and has more projects on the horizon. Separating systems is both time-consuming and costly, but must be done to secure the future health of the Charles River and its boaters.

Acknowledging the public's need for better, "real-time" water quality information, CRWA, with financial aid from federal, state and local government programs created and

implemented a water quality monitoring and public notification project in 1998. The program completed its eighth successful season in October 2005 with its assessment of bacteria levels for the Head of the Charles Regatta.

"Samples taken from the Charles are analyzed for fecal coliform bacteria, which signals the presences of human and animal waste and is also an indicator of other, more harmful bacteria," said Ariel Dekovic, who manages daily notification of the flag colors. "The models predict daily fecal coliform bacteria concentrations, and the probability that these concentrations exceed the Massachusetts state water quality standard for safe boating conditions."

The program relies on a combination of water quality sampling and the use of statistical models developed by CRWA in 2002 in collaboration with U.S. Geological Survey and Tufts University.

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