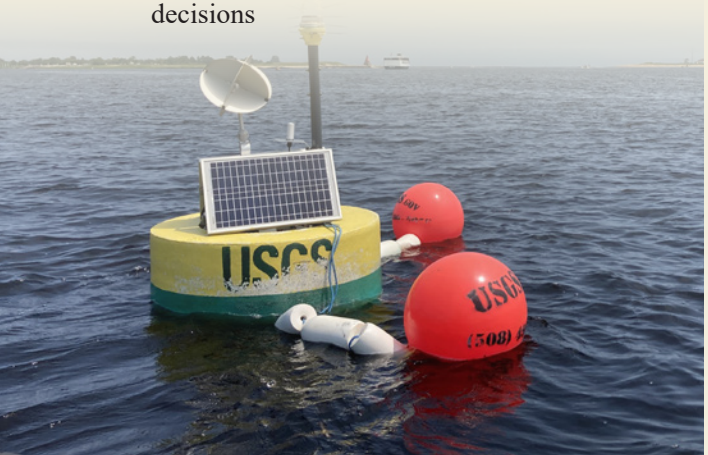
Goals

- Provide water-quality data to MassDEP to help meet Clean Water Act of 1972 requirements, and describe water-quality conditions compared to the Massachusetts-designated use criteria of the Merrimack River and selected tributaries
  - Collect water-quality data for nutrients, selected metals, and water properties such as pH and dissolved oxygen
  - Monitor *Escherichia coli* bacteria in the Merrimack River
- Build a database for future nitrogen modeling
  - Evaluate the need for long-term monitoring and calculate nitrogen loads
  - Excess nitrogen can cause overgrowth of invasive aquatic plants and algae, which reduces dissolved oxygen levels in the water and results in fish kills
- Provide data on dissolved oxygen in marine and inland waters to:
  - monitor conditions important to the survival of endangered shortnose sturgeon
  - use when making environmental-planning decisions



Merrimack River Facts:

- The size of the watershed is 5,010 square miles.
- It is the main supply of drinking water for about 500,000 residents in five Massachusetts communities.
- The river is home to shortnose sturgeon, an endangered fish species.
- Recreational uses include boating, swimming, and fishing.

https://www.usgs.gov/centers/new-england-water-science-center/science/water-quality-monitoring-merrimack-river-watershed#overview

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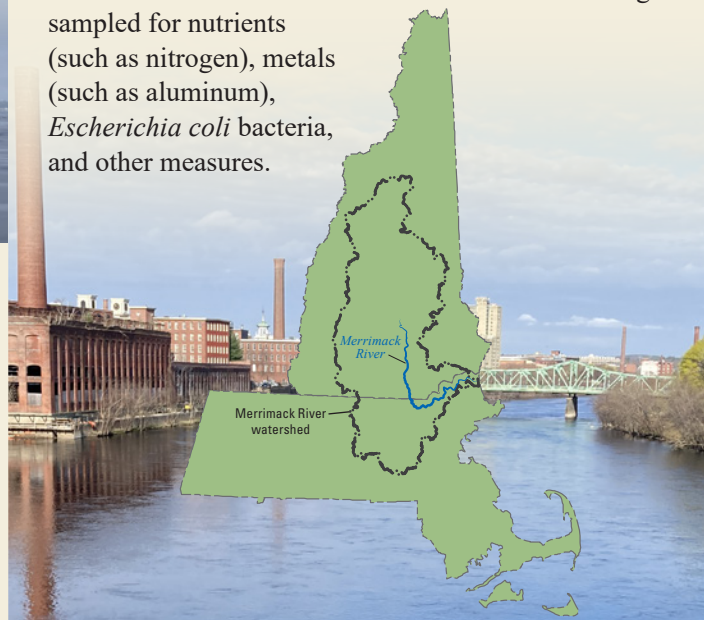
Water-Quality Monitoring *of the* Merrimack River Watershed in Massachusetts

Mission

The U.S. Geological Survey (USGS) has been working in collaboration with the Massachusetts Department of Environmental Protection (MassDEP) on a project to collect water-quality data from the Merrimack River watershed since April 2020. Twelve locations in the Merrimack River watershed are being sampled for nutrients (such as nitrogen), metals (such as aluminum), *Escherichia coli* bacteria, and other measures.



General Information Product 216

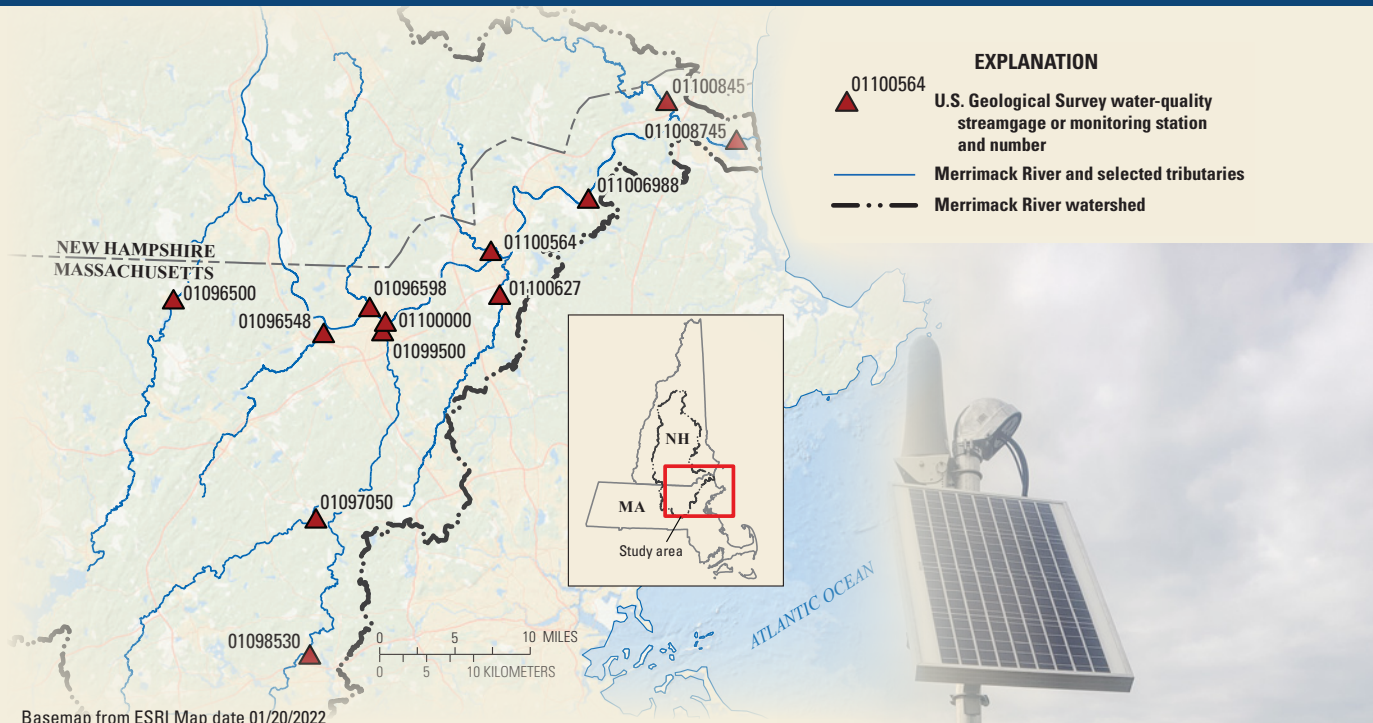
U.S. Department of the Interior
U.S. Geological Survey

Work in the Merrimack River Estuary

- Water-quality sample collection is planned for twice each month from May through October of each year.
- Continuous water-quality monitoring equipment is planned to be deployed from May to October each year. Collected data can be viewed in real time, at https://waterdata.usgs.gov/nwis/uv/?site_no=011008745.

Some of the real-time data collected include:

- Water temperature
- pH
- Dissolved oxygen
- Salinity



Basemap from ESRI Map date 01/20/2022
Streamgage data and watershed boundary from USGS

Station number	U.S. Geological Survey station name
01096500	Nashua River at East Pepperell, MA
01097050	Assabet River at Main Street near Concord, MA
01098530	Sudbury River at Saxonville, MA
01099500	Concord River below River Meadow Brook at Lowell, MA
01100000	Merrimack River Bl Concord River at Lowell, MA
01100564	Spicket River at Short Street, Lawrence, MA
01100627	Shawsheen River at Balmoral Street at Andover, MA
01096598	Beaver Brook at Lowell, MA
01096548	Stony Brook at Chelmsford, MA
01100845	Powwow River at Amesbury, MA
011006988	Merrimack River at Bates Bridge, Haverhill, MA
011008745	Merrimack River Estuary upstream of Shad Creek, Salisbury, MA