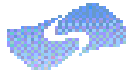
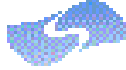


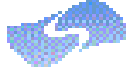
# Low Flow Inventory



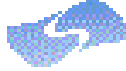
[Groundwater Withdrawal](#)



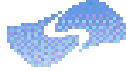
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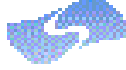
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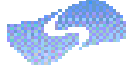
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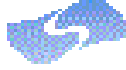
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## Buzzard's Bay Basin

### Observations

[Suspected Causes: Water Withdrawals](#)

[Consequences: Aquatic Flora and Fauna](#)

[References and Resources](#)

### Observations

Low flow problems have been noted on both the [Mattapoissett and Paskamanset Rivers](#) within the Buzzard's Bay basin. In September of 1999, a freshwater mussel surveyor for the Massachusetts Natural Heritage and Endangered Species Program found a series of deep pools with little flow between them on the Mattapoissett River at the Route 6 crossing in Mattapoissett (1). Further upstream just north of route 195 in Mattapoissett, the river was "bone dry" and local kids were riding their ATV's up and down the streambanks.

### Suspected Causes

#### Water Withdrawals

Several sources indicate that groundwater withdrawals may be the source of low flow events in the [Mattapoissett and Paskamanset Rivers](#). A USGS study of streamflow and groundwater reported that groundwater withdrawals on both the Mattapoissett and Paskamanset Rivers depleted streamflows as compared to upstream sections or other similar nearby streams (2).

Town wells for the towns of Mattapoissett, Fairhaven, and Marion are located close to the segment of the [Mattapoissett River](#) that was observed dry in 1999 (1). In addition, the USGS Water Resources Investigation stated that a significant percentage of the baseflow of both the Mattapoissett and the Paskamanset Rivers is pumped out of nearby groundwater wells. Approximately 78% of this water from the Mattapoissett River Basin is then lost to the river when it is discharged as wastewater out of the subbasin through sewage treatment plants in Fairhaven and Marion. Likewise on the [Paskamanset River](#), 100% of pumped groundwater is discharged directly into Buzzard's Bay as wastewater and, again, lost to the river. These groundwater withdrawals have apparently altered the relationship between drainage area and streamflow at least for the Paskamanset River, which was studied in more detail by USGS. Upstream of the wellfield a relationship between drainage area and stream discharge was established. Downstream of the wellfield, discharge was lower than expected according to this relationship, but when the amount of water pumped from the nearby wellfield was added to the actual stream discharge, the relationship was reestablished. These results indicate that the water pumped from the wells was causing an equal amount of induced infiltration from the river (2).

An earlier study by the Department of Environmental Management's Office of Water Resources also found that water withdrawals from the [Mattapoissett](#) and, to a lesser extent, the [Paskamanset Rivers](#) were a significant portion of base flows. In the Mattapoissett River, 1980-1981 withdrawals equalled 87% of estimated base flow and in the Paskamanset River, withdrawals were 21% of estimated base flows (3).

### Consequences

#### Aquatic Flora and Fauna

During the 1999 low flow episode on the [Mattapoisett River](#), a mussel surveyor observed a few scattered mussel shells of common species and mussel trails in isolated pools (1). Low flows can cause elevated stream temperatures and reduce dissolved oxygen concentrations in isolated pools, causing mussels to move in search of better conditions or, like many other aquatic organisms, suffer increased predation risk, severe metabolic stress or even death.

### References & Resources

1. Brian Reid, formerly of Wildlands Trust & MA NHESP, personal communication February 2002.
2. Bent, Gardner C. 1995. Streamflow, Ground-Water Recharge and Discharge, and Characteristics of Surficial Deposits in Buzzards Bay Basin, Southeastern Massachusetts. [USGS Water-Resources Investigations Report 95-4234](#).
3. Massachusetts Executive Office of Environmental Affairs, Department of Environmental Management, Office of Water Resources. September 1995. Water Resources of the Buzzard's Bay Watershed: Water Use, Hydrology, and Natural Resources.
4. [USGS real-time stream gage data for the Paskamanset River near South Dartmouth](#).

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