

Sharon Health Department Lake Testing Program

Based on the regulations stated in the [Massachusetts 105 CMR 445.00: State sanitary code chapter VII: Minimum standards for bathing beaches](#)

1. Why does the Health Department test Lake Massapoag Beaches?

Natural water bodies like Lake Massapoag may be contaminated with disease-causing bacteria from animals, swimmers, septic systems or other sources. To protect the health of persons using the beaches, the Sharon Health Departments carries out weekly testing on public beaches throughout the swimming season. The requirements for testing are described under State regulations for bathing beaches (105 CMR 445.000). If testing that violates state regulations are found, or other conditions that may harm water quality are identified, public beaches are closed by the Sharon Board of Health.

The goals of the lake testing program are: 1) to ensure a safe swimming area through regular monitoring of water quality in the Lake; 2) to determine possible sources of bacterial contamination around the Lake; and, 3) to evaluate the need for water management efforts and regulatory measures to protect this natural resource.

The Sharon Health Department also carries out a more extensive testing program than required by the State in order to better assess conditions across the Lake. Testing is carried out not only at swimming beaches but also in locations where bacterial contamination from runoff or other sources might enter the Lake. This comprehensive testing approach better protects the health and safety of all users of the Lake.

2. What tests are carried out, and why? (As stated in section 445.030)

A) Physical Quality

(1) Sludge deposits, solid refuse, floating waste solids, oils, grease or scum are present; or

(2) There are safety hazards including, but not limited to, fast currents, sharp drop-offs or an unstable bottom in the wading area(s), or lack of water clarity.

B) Bacteriological Quality

(1) The results of a sanitary survey or other information indicates that sewage or other hazardous substances may be discharged into the bathing water to a degree considered by the Board of Health or the Department to be of public health significance; or

(2) Epidemiological evidence discloses the prevalence of an infectious disease or other health condition which is considered to be related to the use of the bathing water and is considered by the Board of Health or the Department to be of public health significance; or

3) The bacteriological quality of the bathing water is unacceptable based on the standards specified in 105 CMR 445.031 and the following criteria:

(a) two samples of bathing water, collected on two consecutive days, that both exceed the single sample water quality standard, or one sample of bathing water that exceeds the single sample water quality standard when an additional sample is not collected on the following day; or

(b) one sample of bathing water that exceeds the single sample standard at beaches where, in two or more of the last four full beach seasons, samples collected on two consecutive days both exceeded the single sample water quality standard; or

(c) any bathing water sample that exceeds the geomean water quality standard.

Because Lake Massapoag is freshwater the indicator organisms tested is *E.Coli* or *Enterococci*. *E.Coli* is a type of bacteria found in the intestinal tract of humans and other animals. This species of bacteria serves as an “indicator organism” – a marker that indicates contamination of the lake water by waste products, and possibly other types of bacteria that may compromise swimmer health. The presence of *E.coli* in the beach water also reveals the possible presence of other types of bacteria that may cause vomiting, diarrhea and related illnesses.

C) Oil, Hazardous Materials, or Heavy Metals.

Oil, hazardous materials, or heavy metals are present in excess of surface water quality standards or guidelines established by the United States Environmental Protection Agency or the Massachusetts Department of Environmental Protection.

Frequency of Testing: (As stated in section 445.032)

- 1) The Board of Health, its agent, or any other authorized person shall collect the bacteriologic samples: (a) Within the five days immediately preceding the opening of the bathing season; and (b) At least weekly during the bathing season at a time and day approved by the Board of Health or the Department; and (c) Prior to reopening a beach after closure due to the presence or suspected presence of any of the conditions specified in 105 CMR 445.030**
- 2) Testing for oil, hazardous materials, or heavy metals shall only be required if the operator, the Board of Health, or the Department has information indicating possible contamination of the bathing beach or bathing waters from oil, hazardous materials or heavy metals.**

3. What are the State standards for fresh water at swimming beaches?

As stated in section 445.031:

No single *E.Coli* sample shall exceed 235 colonies per 100 ml. and the geometric mean of the most recent five *E. Coli* samples within the same bathing season shall not exceed 126 colonies per 100 ml.

No single *Enterococci* sample shall exceed 61 colonies per 100 ml. and the geometric mean of the most recent five *Enterococci* samples within the same bathing season shall not exceed 33 colonies per 100 ml.

4. What is a geometric mean, and how is it used?

A geometric mean is a type of average of a set of results. The geometric mean provides a more accurate picture of general water quality than a single sample over a period of time. It is different from a mathematical average however, as it “dampens” (i.e., reduces) the effect of very high or very low results that might “skew” the final bacterial reading. The mathematical average might result in a high reading over time despite rapid declines in bacterial levels following a single spike in bacterial levels. The geometric mean diminishes the impact of a single high sample result that may not actually indicate a long term contamination issue. The calculation evaluates overall water quality using 5 individual samples over weeks or a season.

Click this link for more information about the [geomean water quality standard](#).

5. What are the sources of bacterial contamination in the Lake?

Natural waters are prone to multiple sources of potential contamination—failing septic systems, waste from dogs, birds and other animals, very young children in diapers, commercial and agricultural drainage etc. Major rainfall events can also wash waste materials from the beach area and surroundings directly into the lake or other water bodies that feed into the lake. In many cases the problems are transient; the bacterial levels decrease rapidly within a day or even a few hours. Other conditions however may seriously harm lake water quality and potentially cause disease in persons exposed to swimming water contaminants.

6. What happens if a high bacterial level is found in the Lake?

If a high bacterial level is found in a swimming area, such as Memorial Park Beach or Community Center Beach, the Sharon Board of Health will require the beach to be closed. Repeat testing is then carried out quickly to see if bacterial levels have changed. In more than 80% of cases statewide, bacteria decreases to a safe level before the first test results are reported. In most cases, subsequent testing results in lower readings of bacteria. Often the initial reading stems from a transient source of contamination, rather than a persistent source, such as a faulty septic

system.

Signs warning of high bacteria levels are required when:

- Two samples collected on consecutive days both exceed the single sample water quality standard, or one sample exceeds it and a re-test is not collected the following day.
- One sample exceeds the water quality standard at beaches where, in two or more of the last four full seasons, samples collected on consecutive days exceeded the water quality standard.
- The geometric mean standard is exceeded.
- Preemptive: Assumption of bacterial exceedance after rainfall/storm event based on historical data.
- Physical quality: Presence of solid refuse, floating waste solids, oils, grease, scum, or hazardous materials.
- Safety hazards: Presence of dangerous conditions, including fast currents, sharp drop-offs, water clarity/visibility issues.

If a high bacterial level is found in a *non*-swimming area, the potential sources of contamination will be evaluated. Swimming beaches, however, may remain open if their specific bacterial levels are within regulatory standards, and there is no possibility of direct contamination to the swimming areas.

7. Why does Sharon test at other sites around the Lake?

Lake studies have shown that bacterial contamination may come from other places around the lake—not just specific swimming areas. In order to assess the general health of the Lake waters, tests are carried out at areas where brooks or streams flow into the lake, where nearby piping exits into the lake, at some private beaches, and other areas. While the results of this testing don't necessarily affect public swimming areas, the data from non-swimming areas or pollutant sources may be considered when making decisions about general Lake water quality and swimming safety.

8. How can I find out about Lake testing results?

The results of Lake testing are reported weekly to the Board of Health, Conservation Commission, Board of Selectmen, and other town officials and committees. The report is also posted on the Sharon town website, and on the Health Department page generally on Fridays.

9. How can I find out more about Board of Health Lake testing?

Contact the Sharon Health Department at (781)784-1500 x 1140, or contact the Sharon Board of Health at the Town of Sharon website, <http://www.townofsharon.net>