

Sharon Health Department Lake Testing Program

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?

The Sharon Health Department tests routinely for a type of bacteria called *Escherichia coli* (*E. coli*), 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. This type of testing is carried out at least once a week and is required under 105 CMR 445.000: Minimum Standards for Bathing Beaches—regulations set by the Massachusetts Department of Public Health. Lake testing also allows the Health Department to identify potential health concerns in swimming water and to work with other Sharon committees and experts to identify contamination sources.

3. 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, 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.

4. 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.

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.

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

State bacterial standards for swimming water are based on the potential for disease increases related to the level of specific bacteria or an indicator organism. Single water samples must not exceed 235 colony forming units (cfu's) per 100 mL of water, and the geometric mean of the past five water samples taken over a period of time must not exceed 126 cfu's.

6. 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. A beach may be kept open if the geometric mean does not exceed 126 colony forming units (cfu) per 100 mL, and the individual sample taken does not exceed 235 cfu per 100 mL.

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.

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>