

Beach Management Protocol

Preamble

The Ontario Public Health Standards (OPHS) are published by the Minister of Health and Long-Term Care under the authority of the Health Protection and Promotion Act (HPPA)¹ to specify the mandatory health programs and services provided by boards of health. Protocols are program and topic specific documents which provide direction on how boards of health must operationalize specific requirement(s) identified within the OPHS. They are an important mechanism by which greater standardization is achieved in the province-wide implementation of public health programs.

Protocols identify the minimum expectations for public health programs and services. Boards of health have the authority to develop programs and services in excess of minimum requirements where required to address local needs. Boards of health are accountable for implementing the standards including those protocols that are incorporated into the standards.

Purpose

The purpose of this protocol is to assist in the prevention and reduction of water-borne illness and injury related to recreational water use at public beaches, and to assist boards of health in the delivery of local, comprehensive public beach management programs, which include, but are not limited to:

- Surveillance and inspection, including pre-season assessment and routine public beach surveillance;
- Management and response, including response to complaints and adverse events at public beaches and communication strategies for the public and stakeholders; and
- Reporting of Safe Water Program data elements to the Ministry of Health and Long-Term Care (the “ministry”) related to recreational water use at public beaches.

Public beaches within provincial parks are generally the responsibility of the Ministry of Natural Resources; however, this is done in consultation with the board of health. The board of health is not responsible for routine monitoring of private residential beaches.

Recreational water quality is influenced by various environmental and built factors, including rainfall, wave action, water and ambient air temperatures, waterfowl, industrial waste discharges, storm water outflows, septic system discharges, and agricultural run-off.

This protocol replaces the *Beach Management Protocol, January 1998*.

Reference to the Standards

The table below identifies the OPHS standard and requirements to which this protocol relates.

Standard	Requirement
Safe Water	Requirement #1: The board of health shall report Safe Water Program data elements in accordance with the <i>Beach Management Protocol, 2008</i> (or as current); the <i>Drinking Water Protocol, 2008</i> (or as current); and the <i>Recreational Water Protocol, 2008</i> (or as current).
	Requirement #3: The board of health shall conduct surveillance of public beaches and public beach water illnesses of public health importance, their associated risk factors, and emerging trends in accordance with the <i>Beach Management Protocol, 2008</i> (or as current).

Standard	Requirement
	<p>Requirement #10: The board of health shall ensure that the medical officer of health or designate is available on a 24/7 basis to receive reports of and respond to:</p> <ul style="list-style-type: none"> • Adverse events related to safe water, such as reports of adverse drinking water on drinking-water systems governed under the Health Protection and Promotion Act or the Safe Drinking Water Act; • Reports of water-borne illnesses or outbreaks; • Safe water issues arising from floods, fires, power outages, or other situations that may affect water safety; and • Safe water issues relating to recreational water use including public beaches <p>in accordance with the Health Protection and Promotion Act; the <i>Beach Management Protocol, 2008</i> (or as current); the <i>Drinking Water Protocol, 2008</i> (or as current); the <i>Infectious Diseases Protocol, 2008</i> (or as current); the <i>Public Health Emergency Preparedness Protocol, 2008</i> (or as current); and the <i>Recreational Water Protocol, 2008</i> (or as current).</p>
	<p>Requirement #13: The board of health shall reduce risks of public beach use by implementing a beach management program in accordance with the <i>Beach Management Protocol, 2008</i> (or as current).</p>

Operational Roles and Responsibilities

1) Surveillance and inspection

Pre-season assessment

- a) The board of health shall conduct a pre-season assessment of all public beaches each year. This assessment shall include:
 - i) Inventory of public beaches:
 - Development and maintenance of an inventory of public beaches in its jurisdiction; and
 - Review of the inventory of public beaches before the commencement of the season to confirm the number and location of the beaches that require monitoring as per this protocol. The board of health may also monitor any other public bathing area, except provincial parks, to which the public has access, and where there is reason to believe that recreational use of the water may result in waterborne illness or injury.
 - ii) Historical and epidemiological data:
 - Collection and analysis of historical, environmental, and epidemiological data to assess conditions that may have adverse health effects for the public using public beaches; and
 - Analysis of previous years' data on public beach water conditions and bacterial quality (geometric mean results) to identify factors that can be used to predict influences on water quality. Heavy rain, storm sewer outfalls, waterfowl activity, or wave action have been shown to have an adverse effect on bacterial water quality at many public beaches. This analysis can assist in developing risk management approaches and communication strategies on a site-by-site basis.
 - iii) Environmental survey:
 - Carry out an environmental survey of the public beach prior to the commencement of regular testing of the water quality. The purpose of conducting the survey is to identify possible pollution sources and their potential impact on the quality of the water to determine the safety of the water for public recreational use. As part of the environmental survey, the board of health shall:
 - Verify existing sources of pollution at the public beach, such as storm water outfalls, and identify other sources that may not have been identified in previous seasons;
 - Work with municipalities and other surrounding landowners, wherever possible, to reduce or eliminate sources of pollution, such as garbage and litter; and
 - Collect water samples as deemed necessary from areas such as storm water outfalls, which may influence water quality at the bathing area.

Routine public beach surveillance

- b) The board of health shall conduct routine beach surveillance of all public beaches, including but not limited to, the following components:
- i) Ensure the collection of recreational water samples on a weekly basis, at minimum, to assess ongoing water quality conditions at public beaches in accordance with this protocol. Refer to the water sampling methodology provided in the most current version of *Water Sampling Methodology* for information.
 - ii) Conduct a minimum of one set of five samples per week taken on the same day from each public beach beginning prior to and continuing over the course of the bathing season.
 - iii) Consider the following additional factors with respect to the frequency and timing of water sampling:
 - More frequent sampling is recommended for public beaches that are affected by intermittent contamination sources.
 - Routine samples should be collected at regular times, ideally when bacterial levels are expected to be highest.
 - Where historical data and environmental surveys indicate that water quality has been consistently within the limits of the provincial water quality standards for recreational use, routine surveillance may be reduced to once per month.
 - iv) Collect water samples and any subsequent re-samples for routine surveillance from fixed locations at the public beach that are representative of the majority of the bathing area. Fixed sampling locations will support consistency for analyzing trends in water quality.
 - v) Prepare a detailed layout of the public beach area, including but not limited to:
 - All possible sources of pollution and the distances to the bathing area;
 - The bathing area with shallow sections indicated; and
 - Numbered sampling point locations and the order of samples to be collected.
 - vi) Record sampling conditions at the public beach on a weekly basis based on information contained in the Routine Beach Surveillance Field Data Report provided in the most current version of the *Public Beach – Routine Beach Surveillance Field Data Report*.
 - vii) Use the following guideline to establish the number of sampling sites for extensive public beach areas:

<u>Length of beach</u>	<u>Number of sampling sites</u>
1000 metres or less	5 sites
Over 1000 metres	1 site per 200 metres
- c) The board of health shall:
- i) Review the bacterial test results, as calculated using the daily geometric mean, along with other environmental factors of the particular public beach, to determine the appropriate course of action. Refer to the calculation of geometric mean outlined in the most current version of *Public Beach – Calculation of Geometric Mean* for information.
 - ii) Consider signage posting when the daily geometric mean of the samples for a public beach exceeds the *Ontario Ministry of the Environment Guideline for Recreational Water Quality*.²
- d) The board of health shall implement additional environmental surveys during the course of the bathing season if:
- i) Subsequent bacterial testing of the water demonstrates a significant, unexpected deterioration in water quality;
 - ii) Historical and epidemiological evidence points to the public beach as a possible factor in the prevalence or incidence of an illness that may be water-borne; or
 - iii) There are reports or evidence of chemical, manure, sewage spills or other contaminants that may affect public beach water quality.

2) Management and response

24/7 on-call and response policy

- a) The board of health shall have an on-call system for receiving and responding to reports of water-related emergencies, outbreaks and incidents in the health unit on a 24 hours per day, 7 days per week (24/7) basis related to recreational water use at beaches.

- b) The board of health shall act on complaints and reports related to recreational water use at beaches within 24 hours of notification of the complaint or report to determine the appropriate response required.
- c) Where the board of health suspects that a microbiological, chemical, physical or radiological agent has been transmitted through water intended for recreational water use, the board of health shall:
 - i) Respond appropriately within 24 hours of receiving report of the water-related incident, illness, injury or outbreak; and
 - ii) Conduct outbreak investigations for microbiological agents in accordance with the *Infectious Diseases Protocol, 2008* (or as current).
- d) The board of health shall take immediate action to address any hazardous condition observed during the course of its pre-season assessment or routine beach surveillance of public beaches.
- e) The board of health shall establish local operating procedures for responding to and reporting potentially hazardous spills and other adverse events at public beaches. Refer to the procedures outlined in the most current version of the *Operating Procedures for Responding to Adverse Events at Public Beaches* for information.
- f) Routine recreational water sampling in public beaches at provincial parks is the responsibility of the Ministry of Natural Resources. The board of health shall, upon request, provide advice and consultation to local Ministry of Natural Resources staff with respect to recreational water use at provincial beaches in accordance with this protocol.

Enforcement actions and procedures

- g) The board of health shall address non-compliance with the HPPA¹ and related regulations and take action where such action may be warranted to reduce the risk of illness or injury to the public using a public beach.

Communication and education

- h) The board of health shall establish communication strategies with partner agencies to provide timely and clear information to the public regarding the potential risks associated with the use of public beaches. Communications strategies may include, but are not limited to:
 - i) Posting of signage regarding the status of recreational water quality at public beach locations;
 - ii) Posting information on the board of health website;
 - iii) Disseminating written materials;
 - iv) Issuing media releases to the local newspaper, radio station, or other local media; and
 - v) Informing local stakeholders and elected officials.
- i) Where there is evidence that recreational beach water is potentially dangerous to the health of bathers, the board of health shall ensure that notices are displayed in prominent locations at the public beach indicating the nature of the risk. Considerations with respect to sign posting shall include:
 - i) The evidence to support the posting of signs may be based on bacteriological analysis, assessment of historical environmental and epidemiological data, or the physical quality of the water.
 - ii) Posting involves placing one or more signs at conspicuous locations along the affected public beach or shoreline. The notices (signs) should be clear, concise, and recommend a course of action to the public based on the specific risk.
 - iii) The international icons for safe or unsafe swimming should also be incorporated into the signs.
 - iv) The posting and removal of signs at public beaches should be carried out by the owner/operator.
 - v) The signs shall be left in place for as long as deemed necessary and promptly removed when the adverse condition no longer exists. The duration of beach posting should take into account any available evidence and historical data related to the beach in question. Posting should continue until surveillance of the water quality demonstrates that the risk to bathers is at a level considered by the board of health to be acceptable. Where beach water contamination follows a heavy rainfall or other environmental factors known to influence the recreational water quality, notices of beach postings may be removed when previous experience suggests that sufficient time has elapsed for water quality to have recovered.

- vi) Where historical data show that the bacterial counts consistently either exceed or fluctuate above the limits set for recreational use, the beach may be permanently posted. Monthly sampling to provide background data may be continued at the discretion of the board of health. After any remedial work is completed that may affect water quality, regular weekly sampling should resume to re-assess the posting requirement.
- j) The board of health shall ensure the availability of educational material and/or information to owners/operators regarding the health and safety-related operational procedures applicable to public beaches.

3) Reporting

- a) The board of health shall record monitoring data pertaining to public beaches under its jurisdiction and provide information as required by the ministry.

Glossary

Adverse condition: A situation that may be potentially harmful to the health of users of the beach.

Advisory: A precautionary notice that informs members of the public about specific risks to health and safety to allow them to take measures to protect themselves.

Bathing season: A bathing season generally begins the first week of June and ends the first weekend of September.

Closure: To cause restriction or elimination of public access to a beach or specific beach areas where a significant risk to health and safety has been identified. Board of health staff will direct owner/operators of beaches to post signage and erect barriers and barricades at appropriate locations to reduce the risk of public exposure to the health hazard.

Environmental survey: An environmental survey of a beach area is a site investigation where observations are made to identify environmental and built factors that may influence recreational water quality.

Geometric mean calculation: For the purposes of this protocol, the geometric mean is a calculation used to estimate bacterial levels of *E. coli* in recreational water. This averaging method is used to reduce the biasing effect of a single high reading. A single high reading may indicate an accident whose cause should be investigated, but a simple arithmetic average incorporating this reading gives an unrealistic estimate of average conditions.

Posting: Posting of a beach means to cause the placement of signs that inform the public about potential risks to health and safety based on an assessment of those risks. The owner/operator of the beach will be primarily responsible for posting and removing the signs as conditions warrant.

Public beach: A beach area owned and/or operated by a municipality which:

- The general public has direct access to;
- Allows supervised aquatics programs or is staffed by lifeguards; and
- Meets the requirements of the sampling protocol for sampling sites.

References

1. *Health Protection and Promotion Act*, R.S.O. 1990, c. H.7.
Available from http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm.
2. Ministry of the Environment. Water management: policies, guidelines, provincial water quality objectives of the Ministry of Environment and Energy. Toronto, ON: Queen's Printer for Ontario; 1994.
Available from <http://www.ene.gov.on.ca/envision/gp/3303e.htm>.