

## Artificial Lake Safety Guidelines

A safely operated artificial lake adds value to a community, minimizes incidents, and provides safe recreational opportunities for patrons and the general public. Guidelines for Artificial Lakes have been developed to increase the safety for the users of these man-made lakes. These lakes have similarities to natural bodies of water but also have important differences. The public and organizations operating businesses on artificial lakes should be aware of these guidelines and should make every effort to follow them. These guidelines focus on reducing the risk of drowning and reducing the risk of illness due to water quality issues and should also be considered by the public and operators of businesses on artificial lakes.

**This is a guideline only. Additional Items may be required under the authority of *The Public Health Act*.**

October 2015

## Acknowledgements

We wish to acknowledge the assistance of the Manitoba Coalition for Safer Waters. Material found in this guideline follows many of the recommendations provided in the *Waterfront Safety Guidelines (2005)* released by the Manitoba Coalition for Safer Waters.

## Preface

Guidelines for artificial lakes have been developed to increase the safety for the users of these man-made lakes. These lakes have similarities to natural bodies of water but also important differences. The public and organizations operating businesses on artificial lakes should be aware of these guidelines and should make every effort to follow them.

These guidelines focus on reducing the risk of drowning and reducing the risk of illness due to water quality issues. These guidelines do not specifically address the risk of medical incidents that may occur by users of artificial lakes. These risks should also be considered by the public and operators of businesses on artificial lakes.

These guidelines are intended specifically for operators inviting the public or paying patrons to visit an artificial lake for recreational use. Operators may be aware of additional resources to assist them in operating a safe facility. These resources include:

1. *Waterfront Safety Guidelines* developed by the Manitoba Coalition for Safer Waters found at:  
<http://www.mbsaferwaters.ca>
2. The *Guidelines for Canadian Recreational Water Quality* developed by Health Canada can be found at:  
[http://www.hc-sc.gc.ca/ewh-semt/alt\\_formats/pdf/pubs/water-eau/guide\\_water-2012-guide\\_eau/guide\\_water-2012-guide\\_eau-eng.pdf](http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/pubs/water-eau/guide_water-2012-guide_eau/guide_water-2012-guide_eau-eng.pdf)
3. Information on water quality related to recreational water in Manitoba on the Manitoba Conservation and Water Stewardship website found at:  
<http://www.manitoba.ca/beaches>

## **Issues discussed in this guideline include:**

### **- Physical features**

To reduce the risk of drowning and/or injuries, it is important to assure that the physical features of the lake do not pose any unnecessary risks such as:

- Features that could cause an entrapment risk, other hazards to swimmers, such as unexpected deep water, boats or other activities that may collide with swimmers;
- Features, other than designed platforms/structures, that would encourage someone to jump off or fall off a structure into the water;
- Water clarity is important so that swimmers can be seen if a rescue is needed. Visibility of swimmers is important in case they require assistance.

### **- Water Quality**

Good water quality can prevent illness from developing caused by exposure to the water while swimming or taking part in other water activities. Some challenges have occurred with artificial lakes in maintaining appropriate water quality as they often do not have ongoing water flow into the lakes. Appropriate sanitary facilities and water monitoring are important to prevent outbreaks of infectious diseases. Prevention of pets from defecating on or near the beach is important as well as garbage clean up to reduce the numbers of birds and animals from frequenting the beach

### **- Safety Equipment, Safety Measures and Emergency Response Plan**

Evidence shows that appropriate safety equipment, trained staff and an emergency response plan can prevent drowning. This guideline outlines important considerations for operating a facility in relation to these measures.

### **- Public /Patron Education**

Appropriate education of the public or patrons who use the facility is important to prevent drowning and illness. Individuals using the lake should be provided with information on how to use the facility safely and what to do in an emergency.

## The Value of Artificial Lakes

A safely operated artificial lake adds value to a community, minimizes incidents, and provides safe recreational opportunities for patrons and the general public. Everyone can play a role in making the artificial lake, recreational areas safe. It begins with recognizing that there are hazards and risks associated with recreation activities that take place in, on or near water. Owners, operators of artificial lakes, their patrons and the public in general can all take steps to avoid or minimize risks and make artificial lakes safe for everyone.

### Definitions

**Artificial Lake** means an outdoor, artificially constructed basin that

- (a) has a sand, clay or mud bottom;
- (b) is not lined with concrete, fibreglass, vinyl or similar material;
- (c) is intended for swimming, wading, diving or one or more other water recreational activities;
- (d) has a water depth greater than 60 cm; and
- (e) has a surface area greater than 1,500 m<sup>2</sup>.

**Supervised Waterfront** refers to an area for swimming and other recreational water activities where supervision is provided.

**Unsupervised Waterfront** refers to an area for swimming and other recreational water activities where supervision is not provided.

**Swimming Area** refers to that section of a waterfront that is marked and designated exclusively for swimming and wading activity only. In this area hazards that pose a risk to the safety of patrons have been minimized. Boating is prohibited in this area.

**Owner** refers to a person, an agent or trustee of the owner who has care and control of an artificial lake (e.g. municipal or private ownership, provincial or federal government, camp owner).

**Operator** refers to a person or corporation designated by the owner as being responsible for the safe operation of the artificial lake (e.g. private contractor), and includes the owner.

**Lifeguard /Beach Safety Officers<sup>1</sup>** means a person with the qualifications set out in subsection 12(1) or 12(2) of the Swimming Pools and Other Water Recreational Facilities Regulation (MR 132/97), and has successfully met the qualifications of Lifesaving Society National Lifeguard Waterfront Certificate, who is appointed by the operator of an artificial lake to watch over the bathers while they are in or around the waterfront and to supervise bather safety.

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<sup>1</sup> Beach Safety Officer Reference provided by Manitoba Conservation and Water Stewardship, Parks and Protected Spaces.

**Waterfront Staff** refers to non-lifeguard personnel or individuals designated by the owner or operator to perform duties associated with waterfront operations.

### **Owner/Operator Responsibilities**

Every owner and operator has a responsibility to maintain the area in a safe condition, especially in areas of high use. These guidelines are recommended for **all** artificial lakes.

**Appendix A (Artificial Lake inspection Checklist)** is a valuable tool that operators can use as a reference to periodically assess their facilities through in-house (operator based) site inspections.

## Section 1. PHYSICAL FEATURES

1. Areas to be used (or not used) need to be clearly marked with signs, buoy lines, buoy markers, flags or other appropriate measures.
2. All signs should be posted where they are clearly visible. See **Appendix B** for Signage Requirements.
3. If the facility is operated after sundown, provide outdoor lighting for clear sight of all activities. (Refer to section 11(2) of the *Swimming Pools and Other Water Recreational Facilities Regulation* for guidance)
4. Communication devices and/or signage should be located in highly visible and easily accessible locations directing individuals on steps to contact emergency services in case of emergency.
5. Beach entry to the lake must be unobstructed at the water line to a minimum 1.3 m.
6. Lake basin in the swimming area must consist of a sand bottom or equivalent to a 2 m water depth. The basin floor should have a bottom slope of 1:12 to a water depth of 1.5 m; and have a slope of 1:3 to a depth of 2 m.
7. Personal watercraft and boats shall be kept away from public swimming area(s). The swimming area(s) should be clearly marked, visible and recognizable from the water as restricted areas in which personal watercraft and other boats are not allowed.
8. Wake boarding, wind surfing and other recreational board activities should not be conducted in the swimming area
9. Regularly inspect the designated swimming area and waterfront for hazards (broken glass, hidden underwater dangers, etc.), document the hazard and eliminate where possible. Where hazards cannot be eliminated, the risk they pose to patrons should be identified, marked and minimized. Records should be kept of daily, weekly, and seasonal opening and closing inspections (See **Appendix A**).
10. Waterfront and equipment inspection and maintenance programs should be established. Any required repairs and replacements should be made promptly. Records should be kept of daily, weekly, and seasonal opening and closing inspections.
11. It may be necessary to restrict the operation of unauthorized all-terrain vehicles to specific areas of the waterfront. Operation of both non-motorized and motorized vehicles can pose a danger to beach patrons.
12. Although inflatable objects are not banned at all waterfront situations, certain factors such as offshore winds, surf and currents, or fountains can make these objects **extremely dangerous**. Public awareness should be emphasized.
13. To avoid incidents and health hazard conditions, it may be necessary to develop rules regarding **pets** at the waterfront.
13. Sanitary facilities (i.e. toilets and urinals), and hand wash basins should be readily accessible and exist in numbers that are capable of servicing all patrons.
14. Artificial Lakes that may impact natural water systems or ground water must be approved by Manitoba Conservation and Water Stewardship. Municipal requirements and zoning laws may also apply.

## **Control of Hazardous Areas**

Dangerous waterfront areas should be clearly marked “**no swimming**” and/or “**no entry.**” Float lines, buoy markers, or physical barriers may also be required to keep the public away from these areas. These markers should be obviously different from ones that designate safe swim areas.

## **Water Clarity<sup>2</sup>**

It is important that water at designated swimming areas be clear enough for users to estimate depth, to see subsurface objects easily and to detect the submerged bodies of swimmers or divers who may be in distress.

## **Chemical Usage**

Prior to any chemical added to an artificial lake, a plan should be developed and submitted to Manitoba Health and to Manitoba Conservation and Water Stewardship for approval. The plan shall outline the chemicals approved for aquatic environments outlining the rationale for usage and frequency. Records should be kept detailing the product, volume/dosage and date of application.

## **Staff Identification/Clothing**

All waterfront staff should be clothed so that they are easily identified. Lifeguard uniforms should not restrict movement or emergency response time. Uniforms worn by other staff should be designed so that they will not be mistaken for lifeguards or other emergency staff.

## **Signage**

Signs should be posted at entrances and exits to the waterfront, or where there are no specific entrances and exits, at reasonable intervals along/near the swimming area, that convey safety information.

See **Appendix B** for appropriate signage requirements.

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<sup>2</sup> *Guidelines for Canadian Recreational Water Quality: Third Edition*

## Section 2. WATER QUALITY<sup>3</sup>

### 1. Routine testing

Collect a minimum 3 to 5 water samples, dependent on the size of beach in consultation with the Public Health Inspector, within the clearly marked swimming area of the beach on each artificial lake basin and submit samples to an accredited laboratory for *Escherichia coli* (*E. coli*) analysis **every 2 weeks**. (See **Appendix C** for *complete* water sampling procedure)

- a. If a geometric mean of the samples collected shows >200 CFU/100 ml; or if any single result shows >400 CFU/100 ml, an immediate re-sampling should be done, and the area Public Health Inspector **must** be advised.
- b. If a geometric mean of the re-samples remains >200 CFU/100ml after re-sampling, the Public Health Inspector **must** be contacted.
- c. In accordance with *The Public Health Act* if there is reasonable evidence to indicate a threat to public health exists or is predicted to exist, the Medical Officer of Health (MOH) may require Beach Advisory Signs to be posted.
- d. Copies of all bacteriological reports should be kept on site for a period of 2 years.

### 2. Algal blooms

Operators should contact their area Public Health Inspector or Water Quality Management Section, Conservation and Water Stewardship for further information when algae blooms are observed.

In the presence of an algal bloom, samples should be collected and submitted to an accredited laboratory for cyanobacteria and microcystin analysis (See **Appendix C** for *complete* water sampling procedure)

- a. Algal blooms must be sampled when:
  - i. Algal blooms are observed by the owner/operator during their routine beach monitoring activities; or
  - ii. Algal blooms in the artificial lake are reported by the general public or regional staff from Manitoba Health, Healthy Living and Seniors, or Manitoba.
- b. If the concentration of microcystin exceeds 20 µg/L, the Medical Officer of Health **must** be contacted. If there is reasonable evidence to indicate a threat to public health exists or is predicted to exist, the Medical Officer of Health may require Algae Toxin Advisory Signs to be posted. Immediate re-sampling should be done and continue daily until re-sampling results are below 20 µg/L.
- c. If the number of cyanobacteria in a sample exceeds 100,000 cells per mL, the Medical Officer of Health **must** be contacted. If there is reasonable evidence to indicate a threat to public health exists or is predicted to exist,

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<sup>3</sup> *Guidelines for Canadian Recreational Water Quality: Third Edition, and Manitoba Water Quality Standards, Objectives and Guidelines*



the Medical Officer of Health may require Algae Advisory Signs to be posted.

- d. Copies of all algae reports should be kept on site for a period of 2 years.

***The area Public Health Inspector should be carbon copied (CC'd) on all sampling submissions.***

**3. Swimmers Itch**

Occurrences of swimmer's itch **must** be reported to Manitoba Conservation and Water Stewardship, Health Links, or to designated staff in Regional Health offices and Nursing Stations. Please see the Manitoba Conservation and Water Stewardship web site at

<http://www.gov.mb.ca/waterstewardship/quality/beaches.html> for information.

## **Section 3. SAFETY EQUIPMENT, SAFETY MEASURES AND EMERGENCY RESPONSE PLAN<sup>4</sup>**

### **Supervised Artificial Lakes**

At artificial lakes where lifeguard supervision is provided, the following guidelines are recommended:

#### **Communications**

A telephone, or other communications device, should be available for emergency use. This should be accompanied by a list of names and numbers of the local emergency services.

#### **Lifeguard/Beach Safety Officer Qualifications**

The recommended minimum qualifications for a lifeguard are:

- (a) is 16 years of age or older;
- (b) holds a current Lifesaving Society National Lifeguard Waterfront Certificate.
- (c) holds a current Cardiopulmonary Resuscitation Certificate of C-Level or higher, in accordance with the standards set by the International Liaison Committee on Resuscitation;
- (d) holds a current one of the following:
  - (i) St. John Ambulance Standard First Aid Certificate,
  - (ii) Red Cross Standard First Aid Certificate,
  - (iii) Lifesaving Society Aquatic Emergency Care Certificate,
  - (iv) Lifesaving Society Standard First Aid Certificate,
  - (v) Criti Care, Inc. Standard First Aid Certificate; and

#### **Number of Lifeguards/Beach Safety Officers on Duty**

The number of lifeguards required will be dependent on the needs and conditions of each artificial lake.

It may be impossible to provide adequate lifeguard or other safety personnel on crowded waterfronts to ensure the safety of all water front users. Some factors to be considered when deciding the number of lifeguards required include, but are not limited to:

- Water surface of the designated swimming area.
  - Bather load should be calculated at a rate of one person for each 1.5 m<sup>2</sup> of surface area.
- Size of the bather population (number of persons in, on or around the water)
- Distribution of the bather population (distance from shore, distance apart)
- Bather activities (sun tanning, swimming, playing Frisbee.)

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<sup>4</sup> Manitoba Coalition for Safer Waters' *Waterfront Safety Guidelines (2005)*

- Bather demographics (predominately families, singles, seniors, mixed)
- Water conditions (temperature, wave size & type, existence of currents)
- Potential hazards (submerged rocks, holes, sandbars)
- Geographical features (curved shorelines, inset coves, large dunes)
- The experience and training of the lifeguards on duty
- Water sports or recreational activities which may require a water rescue due to injury particularly if participants are using only PFDs (injured person may not be able to hold their head up).
- Risk of bystander rescue (e.g. large sporting event with spectators watching along a dock)

After taking into account all factors listed above, the number of lifeguards should be based on providing adequate supervision of all patrons and activities.

### **Principles of Supervision**

1. Lifeguards must be visible at all times to patrons in, on, or near the water; and must be sufficient in number and location to have a clear line of site throughout the swimming area.
2. The sole responsibility of lifeguards is the safe supervision of the public. Other duties such as maintenance or administration must not infringe on this responsibility.
3. Communication with patrons for safety education purposes must take place, but at all times at least one lifeguard must actively scan the waterfront.
4. If the lifeguards on duty must leave the waterfront or beach for any reason, other lifeguards must take over. If supervision of the waterfront cannot be maintained, the public must be advised that no lifeguard is available.

### **Safety Equipment and Lifeguard Stations**

A list of requirements for safety equipment and lifeguard stations that should be available for lifeguards on site can be seen in **Appendix D**.

### **Safety Plans and Emergency Procedures**

An owner/operator of an artificial lake should develop clear written emergency/safety procedures and instructions. These procedures should be provided to all staff before their first shift, and maintained in an easily accessible location for staff. All staff should be familiar with the contents of the Safety Plans/Emergency Procedures for their facility, and be aware of their responsibilities in case of emergency.

Written emergency procedures and instructions for the facility, should include, but not be limited to, the information specified in **Appendix E**.

## **Incident Reports**

1. Incident reports are established and maintained to record the “who, when, where, why and what action taken” for all incidents and emergencies.
2. Incident reports should be retained for a minimum of two (2) years. Reports should include maps of the area to record locations of incidents and emergencies so that patterns may be established and preventative action taken.

## **Unsupervised Artificial Lakes**

At waterfronts designated for swimming where no lifeguard/beach safety officer supervision is provided the following guidelines are recommended:

### **Communications**

- A telephone, or other communications device, should be available for emergency use. This should be accompanied by a list of names and numbers of the local emergency services. If telephone installation is not reasonable, posting the location and distance of nearest public phone is recommended.

**See Appendix B for information on signage.**

### **Staff**

- The owner/operator may decide to employ staff at that waterfront.
- The duties and responsibilities of such staff will be determined by the role assigned to them by the owner/operator but would not include supervision of swimmers.

## **Unsupervised Rescue Equipment**

- Any staff responsible for emergency response services should be provided with sufficient rescue equipment to allow them to carry out their duty.
- Where there is no staff at the waterfront consideration should be given to providing conveniently located rescue equipment for emergency use.

## **Section 4. PATRON/PUBLIC EDUCATION**

Provide information to the users of the artificial lake to enable them to use the lake and any activities safely. This information should be provided in a format that the public can access and understand.

Training may be required for more complex activities, such as wake boarding or water skiing.

**Artificial Lake Inspection Checklist**

**Artificial Lake**

- Has a sand, clay or mud bottom;
- Not lined with concrete, fibreglass, vinyl or similar material;
- Intended for swimming, wading, diving or one or more other water recreational activities;
- Has a water depth greater than 60 cm, and
- Has a surface area greater than 1,500 m<sup>2</sup>.
- Clearly marked with signs, buoy lines, buoy markers, and flags.
- All signs posted are clearly visible and meets the requirements of **Appendix B** of the **Artificial Lake Safety Guidelines**.

Is this facility operated after sundown?     **Yes**     **No**

**If Yes:**

- Outdoor lighting is provided for clear sight of all activities. (Section 11(2) of the *Swimming Pools and Other Water Recreational Facilities Regulation refers lighting intensity*)
- Public telephones or other communication devices/signage located at the following location: \_\_\_\_\_
- Beach entry to the lake is unobstructed at the water line to a minimum 1.3 m.

**The Swimming Area**

- Consists of a sand bottom or equivalent to a 2 m water depth.
- Basin floor has a maximum bottom slope of:
  - 1:12 to a water depth of 1.5 m
  - 1:3 to a depth between 1.5 m to 2 m.
- Personal watercraft and boats kept away from public swimming area(s).
- Swimming area(s) clearly marked, visible and recognizable from the water as restricted areas in which personal watercraft and other boats are not allowed.
- No broken glass or hidden underwater dangers in the designated swimming area and waterfronts.
- Where hazards cannot be eliminated, hazards are identified, marked and minimized.
- Records kept of daily, weekly, and seasonal opening and closing inspections.
- Waterfront, equipment inspection and maintenance programs are followed.
- Unauthorized all-terrain vehicles, non-motorized and motorized vehicles are restricted from the waterfront.
- Rules regarding **pets** at the waterfront are developed, posted and followed.
- Water clarity meets aesthetic parameters.
- Written plan for chemical usage has been developed & records kept.
- Facility staff is easily identified by the public.

### **First Aid Kit**

- Fully stocked and accessible. **Refer to Appendix D of the Artificial Lake Safety Guidelines for requirements**

### **Signage**

- Posted at entrances and exits to the waterfront, or where there are no specific entrances and exits, at reasonable intervals along/near the swimming area, that conveys safety information.

See **Appendix B** of the **Artificial Lake Safety Guidelines** for appropriate signage requirements.

### **Microbial Water Quality**

#### **Bacteriological Counts**

- A minimum 5 water samples collected on each basin and submitted samples to an accredited laboratory for E.coli analysis **bi-weekly**.
- If a geometric mean (average) of the samples collected shows >200 CFU/100 ml; or if any single result shows >400 CFU/100 ml, the area Public Health Inspector must be consulted.
- Copies of all bacteriological reports kept on site for a period of 2 years.

#### **Algae Blooms**

- Observed: Yes  No  **If Yes refer to Appendix C of the Artificial Lake Safety Guidelines for sampling protocol.**

#### **Lifeguards/Beach Safety Officers**

- Yes  No  **If Yes refer to Artificial Lake Safety Guidelines for qualifications and requirements.**

#### **Safety Equipment (Supervised Beaches)**

- One buoyant rescue aid (rescue can/rescue tube) for each lifeguard on duty.
- A buoyant throwing aid attached to a 6mm line at least 8 metres in length.
- Binoculars
- A paddle board (rescue board) or other rescue craft is available when any part of the swimming area is more than 50 metres from shore, or the surface area of the swimming area is greater than 2500 square metres.
- A rescue craft is available when any part of the swimming area is more than 25 metres from shore.

**Lifeguard Station and Storage Facilities**

Waterfront Stations Yes  No

**If Yes refer to Artificial Lake Safety Guidelines for requirements.**

Observation Towers : Yes  No

**If Yes refer to Artificial Lake Safety Guidelines for requirements.**

Storage Facilities: Yes  No

**Safety Equipment (Unsupervised Beaches)**

- A buoyant throwing aid attached to a 6mm line at least 8 metres in length
- Signage should be posted in a conspicuous location on the water front indicating the location of the first aid kit.

**Safety Plans and Emergency Procedures:** Yes  No

Written emergency procedures and instructions for all facilities, should include, but not be limited to, the information specified in **Appendix E** of the **Artificial Lake Safety Guidelines**.

**Incident Reports**

- Incident reports are established and maintained to record the “who, when, where, why and what action taken” for all incidents and emergencies.
- Incident reports retained for a minimum of two (2) years.

**Communications**

- A telephone, or other communications device, is available for emergency use.
- A cellular telephone inside a waterproof bag, if a telephone line is unavailable.
- List of names and numbers of the local emergency services is posted.

\_\_\_\_\_  
Date Completed

\_\_\_\_\_  
Completed by (Print Name)

\_\_\_\_\_  
Signature

## APPENDIX B SIGNAGE REQUIREMENTS

All signage must be constructed of durable materials and must be maintained.

### Size and Location

- The location of signs is extremely important. General signs should be located at all access points to the waterfront. Specific warning signs should be located at highly visible locations near the hazard it is identifying.
- Signs should have the message visible from both land and water.
- Signs should be large enough to draw people's attention. If a sign is not seen, it cannot educate the public.
- Signage should be posted in conspicuous locations, within the waterfront area of the artificial lake, listing all facility rules including:, but not limited to:
  - Signs indicating water depth changes and hazards such as currents, drop offs, or rocky bottoms which should be posted as close to the hazard as possible.
  - At staffed waterfronts, signs displaying the hours of supervision or services in the area. After hours or when lifeguards are not on site signs indicating that the swimming area is unsupervised should be posted stating *"No Lifeguard On Duty"* Use of flags may also denote operation times.
  - Emergency Contact information listing names and numbers of the local emergency service shall also include location of the emergency telephone and/or other communication device.
  - Signs should be posted to indicate that alcohol consumption is prohibited at the waterfront.
  - At unsupervised artificial lakes, signs indicating that the swimming area is unsupervised, indicating patrons will be swimming at their own risk.

### Plain Language

- Use common words and straightforward ideas on written signs.
- Patrons are most likely to read short, direct messages.
- The signs may include the following messages:
  - *"Swimming is Unsupervised"*
  - *"Watch your Children "*
  - *"Swim with a Buddy/Don't Swim Alone"*
  - *"Waterfront conditions may change"*
  - *"No diving in shallow water"*
- The location of the nearest emergency communications device and first aid equipment
- The name and address of the facility, and its operator
- The person or office to whom site deficiencies should be reported.



### **Size and Contrast of Characters**

- Letter size should be a minimum 2 cm in height and on a contrasting colour.
- Universal pictorial signage should be a minimum 10 cm in height and on a contrasting colour.

### **Universal Sign Recognition**

- Where possible, the use of universally recognized safety signs is highly recommended. These signs can deliver the safety message, regardless of the receiver's language and literacy level.

Examples of recommended signage for artificial lakes can be found in the ***Waterfront Safety Guidelines*** that were developed by the Manitoba Coalition for Safer Waters. This document can be found at <http://www.mbsaferwaters.ca> .

## **APPENDIX C**

### **ARTIFICIAL LAKE WATER SAMPLING PROCEDURE**

#### ***E.coli* Sampling Procedures**

Beach sampling should be consistent with sample frequency, location, and collection method. *Artificial Lake operators should provide a map of the lake identifying sample locations on the map to ensure consistency for sample locations.*

#### Sampling:

- Samplers should document the presence of weather events, large waves, birds, and anything out of the ordinary observed before and/or during sampling.
- 3 to 5 samples should be collected, dependent on the size of beach in consultation with the Public Health Inspector. All sample sites must be located within a designated swimming area.
- Samples should be collected an equal distance apart from one another.
- Samplers must wade out into the water until mid-thigh depth, unless using a sampling pole they reaches a minimum 12-15 feet way from shore. Bottles must be carefully opened without touching the inside of the bottle or cap. Bottles are filled from approximately elbow depth using a sweeping motion through the water column away from the sampler to avoid any possibility of contamination. Immediately recap bottle.
- Label bottle and chain of custody paperwork with the beach name, date, and identifiable sample replicate (1-3, 1-4, 1-5). Copies of the analysis results should be sent to the area Public Health Inspector.
- *E.coli* samples should be placed in a cooler with icepacks and delivered to the lab for analysis as soon as possible.

#### Re-sampling:

- If re-sampling is required due to elevated densities of *E. coli*. Consult with the area PHI for sampling protocol.

#### **Algal Bloom Sampling Procedures**

Algae samples should be collected whenever a bloom is observed.

#### Sampling:

- In the presence of an algal bloom, two samples should be collected:
  - A cyanobacteria (blue-green algae) sample using a 500 mL plastic bottle supplied by the lab.
  - A microcystin sample using a 40mL glass bottle supplied by the lab.
- To sample, enter the water at approximately the middle of the algae bloom and walk to about mid-thigh depth (It is advisable to wear chest waders in a dense bloom) unless using a sampling pole they reaches a minimum 12-15 feet way from shore.
- Open and fill the sample bottle from approximately elbow depth using a sweeping motion through the water column away from the sampler. Immediately recap bottle.

- Label bottle and chain of custody paperwork with beach name and date.
- Cyanobacteria and microcystin samples should be placed in a cooler with icepacks and delivered to the lab for analysis as soon as possible.

**The area Public Health Inspector should be carbon copied (CC'd) on all sampling submissions.**

Re-sampling:

- If re-sampling is required due to elevated cell counts or toxicity, collect another set of cyanobacteria and microcystin samples following the same procedure above.

## **APPENDIX D SAFETY EQUIPMENT**

### **Supervised Lake Rescue Equipment**

Sufficient rescue equipment should be available to meet the needs of the waterfront at artificial lakes. Suggested equipment includes, but is not limited to:

1. A cellular telephone inside a waterproof bag, if a telephone line is unavailable.
2. One buoyant rescue aid (rescue can/rescue tube) for each lifeguard on duty.
3. Binoculars
4. A paddle board (rescue board) or other rescue craft should be available when any part of the swimming area is more than 50 metres from shore, or the surface area of the swimming area is greater than 2500 square metres.
5. A rescue craft is desirable when any part of the swimming area is more than 25 metres from shore.
6. An elevated lifeguard tower or station, with a seat not less than 1.8 metres above the water surface, which permits an unobstructed view of the entire supervised waterfront.

### **Lifeguard Station and Storage Facility Requirements**

**Waterfront Stations** provide the public with a visible central location for emergency services. Such stations can serve as a headquarters for the staff on duty, or as a central meeting point in emergency situations. They may also serve as the First Aid Station, or as a waterfront observation point if a tower is built on top of, or into, the structure. The number of stations will depend upon the size of the waterfront and the number of people who normally use the area.

**Observation Towers** are used by lifeguard staff to observe and supervise the waterfront. They should be not less than 1.8 metres above the water surface, and constructed to allow fast, easy, and safe entry and exit by a lifeguard in emergency situations. The safety of lifeguards and patrons on and around this structure is a priority. It must be maintained in good condition.

**Storage Facilities** are used by waterfront staff to store equipment such as rescue gear, boats, and portable observation towers, etc. Sometimes a storage facility is built into a Waterfront Station, but separate facilities are also common.

## **First Aid Equipment**

The quantity of the First Aid equipment should be available to meet the needs of the artificial lake.

Suggested equipment includes, but is not limited to:

1. A first aid kit located where it can be easily accessed by lifeguard staff. The kit should be inventoried on a regular basis and re-stocked as necessary and meet requirements of Schedule B of MR 132/97 (*Swimming Pools and Other Water Recreational Facilities Regulation*).
2. A personal first aid pouch for each lifeguard on duty.
3. A spinal board with attached straps and head block that allows for the complete immobilization of a patient's body. This board should be waterproof and have the ability to fit on a standard ambulance stretcher.

## **Unsupervised Lake Rescue Equipment**

Suggested equipment includes, but is not limited to:

1. A buoyant throwing aid attached to a 6mm line at least 8 metres in length (where available).
2. Signage should be posted in a conspicuous location on the water front indicating the location of the first aid kit.

## **APPENDIX E EMERGENCY PROCEDURES AND INSTRUCTIONS**

An operator of a public swimming pool shall establish written emergency procedures and instructions for the facility that include, but are not necessarily limited to, the following information:

**(a) Identifying information respecting the facility**

- List the name, location and telephone number of the facility.

**(b) Telephone signage**

- Specify the location of telephones at or near the pool area, and post signage to indicate their locations.

**(c) Emergency contact information**

- List the telephone numbers of relevant emergency services, including 911 (if available), emergency medical response services, fire and police at
  - (i) each telephone at or near the pool area, and
  - (ii) the reception desk (if the facility has a reception desk).

**(d) First Aid Kit**

- Specify the location of the first aid kit, and post signage to indicate its location.

**(e) Emergency Response Procedures**

- Outline the steps to be taken to address an emergency, including
  - (i) immediate actions,
  - (ii) any outside contacts to be made and who is to make outside contacts in the event of an
  - (iii) emergency, and
  - (iv) documentation requirements.