Manitoba Water
Stewardship

Emergency Planning for Water Utilities in Manitoba

- Guideline -

Office of Drinking Water
March 2009

Manitoba
Water Stewardship

For users of this template:

Each Emergency Response Plan (ERP) should consider all issues addressed in the template. Recognizing this, the template is just a guide and is by no means intended to cover all the specificities that may apply to each water utility. Factors such as the size and design of the water system, number of staff and their certification level and skills, as well as other resources available should be taken into consideration in creating an emergency plan to meet your water system(s) needs. The Department of Water Stewardship, Office of Drinking Water makes no representation or warranty that this template contains all information necessary to develop an ERP to deal with every possible emergency that may occur in respect of a water system. At all times it remains the responsibility of the water utility to ensure that the ERP is appropriate for their drinking water system.

Why do you need an Emergency Response Plan?

An emergency is generally defined as a situation that arises suddenly and that can have considerable negative consequences, if fast and effective corrective measures are not taken.

The Emergency Response Plan (ERP) is a document that provides a step-by-step response to, and recovery from, incidents related to situations of emergency. The ability of water utility staff to respond rapidly in an emergency will help prevent unnecessary complications and protect your consumers' health and safety. It may also save you money by preventing damage to your water systems. In addition, the law and regulations listed below require all owners of public water systems to have an Emergency Response Plan (ERP), which they can refer to in case of emergencies that may present a health risk to water users.

Regulatory framework:

The following acts and regulations should be considered in the development of the ERP:

- Regulation 77/2003 "Water and Wastewater Facility Operators Regulation".
- C.C.S.M. c. E80 "The Emergency Measures Act"
- C.C.S.M. c. D101 "The Drinking Water Safety Act".

Section 8(1) of *The Emergency Measures Act* requires local authorities to, among other things, to establish a local emergency response committee, appoint an emergency coordinator and prepare and implement emergency response programs and plans. The emergency coordinator is responsible for coordinating with other emergency response programs and plans.

Section 29(1) of the Water and Wastewater Facilities Operator Regulation requires water and wastewater facility owners to have documented emergency response plans. Section 29(2) requires that the plans be reviewed at least once every two years, and that all facility operators and maintenance personnel have ready access to it at all times.

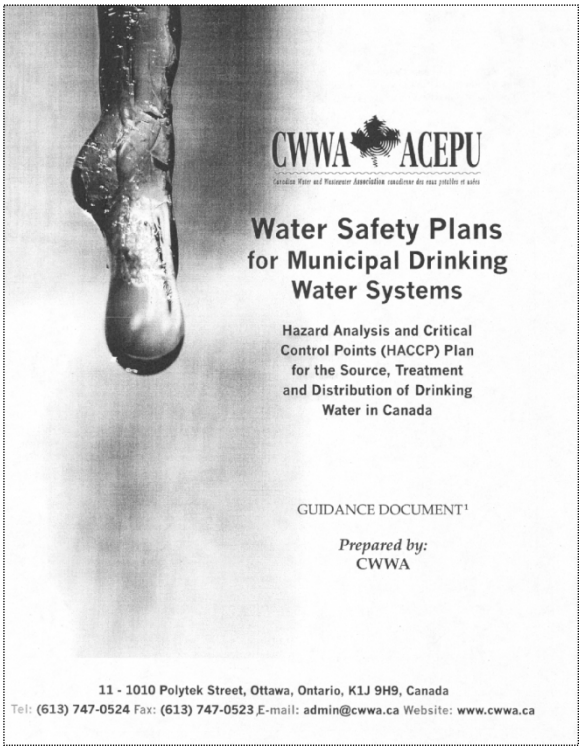
How to use this template?

This emergency response template is intended only as a guideline to assist water utilities to prepare their own emergency response plans. The information is structured in a way that can be useful to all water utilities; however, size, specifics of water systems, vulnerability to certain hazards, and staff commitment to its preparation will play an important role in the level of detail and depth of the ERP.

The template layout follows a logical order, which has been tested in real life emergencies. The experience of organizations such as American Water Works Association, Ontario Clean Water Agency, Emergency Measures Organization of Manitoba, Saskatchewan Environment, EPA, and Ministry of Health of British Columbia has been taken into consideration in the preparation of this template.

Certain elements of the ERP template such as tables, checklists and evaluation questionnaires are ready for use and incorporation into utilities' ERP. Other information in the template is meant to assist utilities in identifying specific issues that may, or may not apply to their situation. Thus, it is recommended that each water utility's plan contain the information provided with this template, yet such plan may be customized to accommodate local conditions and be detailed enough to provide a course of action in an emergency situation and a quick return to normal conditions.

Additional information for large water utilities:



Water utilities of Winnipeg, Brandon, and Portage la Prairie, in addition to this document, are also advised to refer to CWWA's guidance document "Water Safety Plans for Municipal Drinking Water Systems – Hazard Analysis and Critical Control Points (HACCP) Plan for the Source, Treatment and Distribution of Drinking Water in Canada".

Website: www.cwwa.ca

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Emergency Response Plan

Part 1: Preparation Phase

Part 2: Execution Phase

1. OBJECTIVES

A water utility must provide consumers with a level of service that ensures:

a) Adequate quantities of water
b) Safe water
c) Sufficient pressure

Water utilities, regardless of their size and location, have a legal responsibility to provide clean, safe drinking water to their customers, even if supplying water under emergency conditions. **All water utilities must have a documented emergency response plan in compliance with Article 29(1) and 29(2) of Regulation 77/2003 "Water and Wastewater Facility Operators Regulation", under the Environment Act.** The utility that is prepared will be more effective at responding to, and recovering from, emergencies.

2. HAZARD ASSESSMENT

Due to its location and climatic conditions, the province of Manitoba can be affected by a number of natural hazards, such as flood, heavy snowfall, ice storm, strong winds, drought conditions, etc. Other hazards may be caused by humans, such as chemical spills, transportation accidents, vandalism, theft, acts of extremist groups, etc. Many towns and municipalities may already have an Emergency Preparedness Plan. Consult that plan for a list of hazards, estimated probability and duration.

Regardless of the hazard(s) affecting your water utility, there are mainly three types of consequences on your system and your ability to provide customers with service:

① Complete interruption of supply	(rated as *severe* impact)
② Sufficient quantity, but compromised quality	(rated as *moderate* impact)
③ Good water quality, but insufficient quantity	(rated as *minor* impact)

Complete the table below by evaluating the most likely consequence of listed hazards on your water system and your ability to provide service. Refer to the three possible consequences above:

Hazard	Consequence (describe with words, not simply ①, ②, ③)
Flood	
Snow or Ice storm	
Strong winds	
Prolonged drought	
Fire	
Loss of utilities (hydro, etc.)	
Chemical spill	Example: Compromised source; complete interruption of supply (severe)
Vandalism, theft	
Pandemic flu	
Other…	

3. VULNERABILITY ASSESSMENT

After your water utility has completed its hazards assessment (above), the effects of those hazards on different water system components must be established. This process is known as vulnerability assessment (or, where do we have weaknesses?).

3.1. Identify system components. Make a list of the system components you have that allow you to provide service to the customers. You don't need to list every small element of the water system, but rather group main elements of your system as components under the following headings:

- Raw water source and intake (e.g. well/river intake, pump, supply line, etc.)
- Treatment and storage facilities (e.g. chemical dosing devices, chemical storage bins, mixers, compressors, pumps, filters, finished water reservoir, etc.)
- Distribution system (such as main valves, lines, hydrants, other devices, etc.)
- Electrical power supply (transformer, switchboard, gauges, emergency backup stand-by, etc.)
- Communications (phones, fax, beepers, two-way radios, etc.)
- Administration and operations (office, workshop, cars, trucks, etc.)

3.2. Determine the effects of the hazards listed on system components. Some hazards may cause interruption of supply, damage to system components, but others may cause contamination of water, injury to utility's personnel, health risks to consumers, damage to property, etc. Complete table below by rating impact as *minor, moderate, or severe*.

Hazard	Impact on system components				
	Source	Transmission	Treatment	Storage	Distribution
Flood					
Heavy snowfall / Ice storm					
Strong wind					
Prolonged drought					
Fire					
Loss of utilities (hydro, etc.)					
Chemical spill					
Vandalism, theft					
Acts of extremist groups					
Other…					

For water utilities serving a population of more than 5,000: Establish a definition of acceptable levels of service under disaster and recovery conditions. Specific goals to consider are consumer safety, fire suppression, public health needs (hospitals), and other essential commercial/business uses. Most medical facilities require continuous service; contact them to establish minimum daily needs. Some commercial businesses have automated fire suppression systems, sprinklers, etc. Contact your fire department for minimum sprinkler pressure, hydrant pressure and other issues.

4. MITIGATION MEASURES

System components identified in the previous section can become less susceptible to harm by taking mitigation measures. These measures refer to actions taken to eliminate or reduce the harmful effects of water systems emergencies. The following items provide a guide to mitigation measures. Describe in your ERP all features that apply to your water utility.

4.1. Personnel shortages can be minimized by means of:

- Training to assure staff safety during emergency (e.g. if water plant is flooded, electrical wiring may cause injury to personnel)
- Training on water plant operations to ensure that a backup operator is familiar with key components of the plant and water system
- Replacement of absent staff with staff from other utilities or municipalities, in mutual agreement
- Other measures deemed appropriate for your utility

4.2. Mitigation at the raw water source includes the following:

- Having access to an alternate raw water source, if situation allows
- Restricting access of unauthorized persons by fence and gate
- Facilitating access to the water source by utility staff (access by boat, road)
- Maintain wells and surface water intakes; apply setback distance to wellhead
- Having a source water protection plan and wellhead protection plan
- Other measures that may apply

4.3. Mitigation of treatment process failures consists of:

- Isolating the water plant from the distribution system through valves in case of contamination at the plant
- Having power back-up generators and diesel pumps at the water plant
- Having spare parts, spare chlorine pump, etc.
- Having access to alternative sources of treated water through adjacent systems (do you have Memorandum of Understanding or Reciprocity Agreement with other water utilities?)

4.4. Mitigation of distribution failures consists of:

- Having spare parts available (valves, pipes, repair kits)
- Maintaining networks by replacing old, damaged, and poorly built distribution system components; regular flushing, valve and hydrant exercising
- Having redundancy by close-looping of networks and installing sufficient check valves, other control valves, etc.
- Preparing/updating distribution network mapping

4.5. Preventing access to water facilities for all non-authorized individuals by:

- Installing locks and other tamper-proof devices at the water plant, booster station, important control manholes, etc.

- Installing intrusion alarms and deterrent cameras
- Installing steel bars on windows and metal-reinforced doors
- Not revealing exact location of intake works and other structures that cannot be protected by other means
- Having development restrictions by means of zoning by-laws

5. PLAN ACTIVATION

An emergency response plan is a working document that should be used before, during, and after an emergency, or disaster.

The plan can be developed based on the results of the hazard summary, vulnerability analysis, and mitigation measures. The exact content of each response plan will depend on the risk for any given water utility. A response plan must define the measures that will be implemented to minimize the likelihood of an event, or to mitigate its impacts.

There are three basic principles that should be recognized when developing an emergency response plan. The plan should: 1) use or reference existing resources only, not planned ones; 2) be concise and logical; 3) be coordinated with other agencies, such as the Office of Drinking Water, and 4) be part of the Municipal Emergency Plan, if such plan is available.

In addition to hazard/vulnerability assessment and mitigation measures mentioned above, an emergency response plan should include the following elements:

- Plan activation process and emergency contact list,
- Agreements with other organizations (MoU with other utilities or municipalities),
- Emergency response and recovery,
- Training
- Plan review and update

All these elements must be complementary to the Municipal Emergency Plan (if available).

5.1. Essential components of the plan

All water utilities should prepare and maintain a written emergency plan for the provision of services under emergency conditions. One copy of the plan should be kept at the water plant and one at the administration's office. If your municipality has a local emergency response coordinator, the plan should be submitted to them for coordination with other municipal emergency response programs and plans. For water utilities serving more than 1,500 people, there should be two additional copies placed in other secure locations. Water utilities providing service to more than one municipality should give a copy to each one of them for annexing to their respective municipal emergency plans.

The emergency plan should have the following components:

- A detailed map of the distribution system, detailed locations of each valve in the system, including references that will aid in locating these valves, and a map of well locations and surface water intakes, as applicable
- A detailed map of electrical diagrams clearly showing generator and power source change-over
- A contact list of emergency services, regulators, suppliers, contractors, water users with critical needs, media, hydro, phone companies, and water utilities
- A statement of amounts budgeted for emergency use, along with a statement showing who may authorize expenditures for such purpose and under what conditions
- A determination of not less than nine most likely emergencies that may affect the water system (see table in section 3.2 above) and procedures to be followed and actions necessary to provide service during emergencies
- A determination of who would operate the system if all operators are off (i.e. pandemic flu), including any MoU with other utilities or communities
- A description of ways to obtain and transport water from an alternate source, should it become necessary. It is advisable to have arrangements for obtaining water from at least two alternative sources that are not likely to be affected by the same hazards, at the same time
- A description of how often the plan should be revised (at least every two years), who has copies of the plan, etc.
- A description of methods of notification of water users that an emergency is under way.

5.2. Plan activation process

Some emergencies provide a measure of warning, while others may strike unannounced. An emergency plan should have specific actions triggered by specific warnings. Generating a preset list of crucial actions and persons responsible before an emergency strikes is very important. It would be easy to overlook a critical task while trying to develop such a list in the hurried moments during the emergency.

Weather services provide warnings for winds, precipitation, tornadoes, etc. Provincial government departments provide warnings for floods, chemical spills, waterborne diseases, etc. Water utility management structures should ensure that they keep operators apprised of natural and human-caused emergencies that may affect the operation of their water system.

Recent advances in electronic technologies, such as SCADA (Supervisory Control and Data Acquisition) systems, have enabled many water plants to generate automated warnings in case of plant malfunctions. Staff should be trained to observe and report any unusual warnings. Other warnings may come from lab, customers, other agencies, etc. Making the right phone call in a timely manner is crucial to avoiding bigger problems. Thus, it is important to have a communication list completed and ready for use (see list following).

It is also important to know the actual amount of treated water in storage when emergency strikes and, based on seasonal water consumption patterns, to be able to predict the available length of supply (days of supply). The extent of water conservation measures will depend on this buffer capacity and, generally, more aggressive conservation measures will enable the supply available to last longer.

5.3. Emergency Contact List

Water system name and community code: _____

Total treated water storage capacity: _____

Population served (regional plants to include pop. of downstream plants): _____

Operator(s) name	Day phone	Home phone	Cell	Address

Management Contacts	Name	Day phone	Cell	Home phone
Foreman				
Water Coop Board (if applicable)				
Public Works Dept./Engineer				
Chief Admin. Officer				

Regulators' Contacts	Name	Day phone	Cell	Home phone
Drinking Water Officer				
Environment Officer				
Public Health Inspector				
On-duty EMO Officer	---	(204) 945-5555		
Medical Officer of Health				
24-hour Emergency Line	---	(204) 944-4888		

Suppliers	Name	Day phone	Cell	Home phone
Local plumber				
Local electrician				
Local welder				
"Call before you dig" number	---	1-888-365-1172		
Excavation service				
Chemical supplier				
Equipment supplier				
Bulk water hauler(s)				
Bottled water supplier(s)				

Other Emergency Contacts	Phone
Local Police	
Local Fire Department	
Ambulance/Hospital	
Local media (radio, TV station)	

Utilities' Contacts	Phone	Cell/Pager	Fax
MB Hydro/Natural gas			
MB Telecom			
MB Highways			

Priority Water Users	Phone	Cell/Pager	Fax
Hospital 1			
Hospital 2			
Hospital 3			
Personal Care Facility 1			
Personal Care Facility 2			
Personal Care Facility 3			
Water utility 1 (if supplying other utility)			
Water utility 2			
Water utility 3			
School 1			
School 2			
School 3			
Important user (e.g. food process plant)			
Add other users, if necessary			

Mutual Aid Agreement(s) with Other Entities	Contact Person	Phone	Cell
Entity 1:			
Entity 2:			
Entity 3:			

REMINDER: Components of the plan and players involved

- **Inventories**
  - Maps, charts, diagrams, resources, machinery
  - Budget amounts, who authorizes spending, and conditions for spending
- **Services**
  - Emergency contact list, suppliers, contractors
  - Critical water users, water hauling, sharing of resources
  - Memorandums of Understanding (MoU) with other water utilities or towns/municipalities
- **Notification of incidents**
  - How/when do you tell people that you have an emergency?
  - Who is authorized to make notifications and deal with the media?
- **Proclamation of emergency**
  - Local government declares “State of Local Emergency”
  - EMO may issue an “Emergency Prevention Order”
  - Office of Drinking Water may issue a “Director’s Order” before, during, or after an emergency

6. EMERGENCY RESPONSE AND RECOVERY

The following table (6.1) is meant to assist water plant operators and public works staff in rating the severity of an incident and taking the appropriate action (i.e. notify the Drinking Water Officer). The Emergency Action Chart in section 6.2 defines lines of responsibilities and actions to bring the water system to normal operational levels. *Regardless of the nature of the emergency (natural or human-caused), one or more of the consequences described in the table in section 6.1 will likely impact your water system.* Water plant operators should keep this table at the water plant at all times for easy reference.

Terminology used to describe incidents' severity rating:

"ROUTINE" Trouble which can be handled as part of normal operational activity.

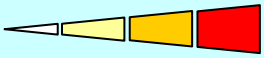
"MINOR" Trouble that can be handled with minimum oversight from public works personnel (foreman) and/or Office of Drinking Water.

"MAJOR" Trouble that may be beyond the capability of utility's personnel and may require declaration of emergency or activation of Mutual Aid Agreement with other utilities. Outside assistance is required because of possible threat to public health, or to the water facilities.

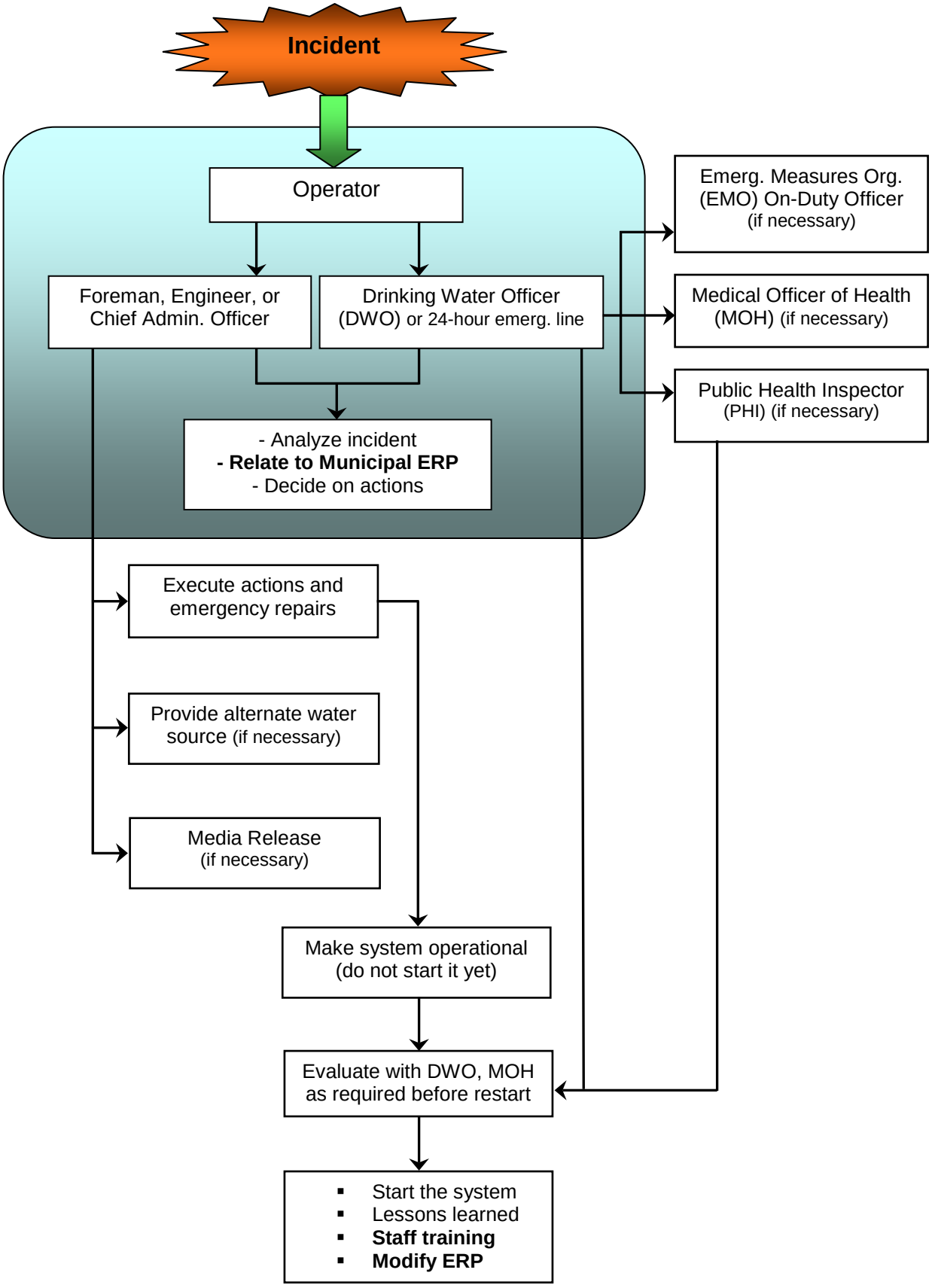
"DISASTER" Trouble is clearly and immediately beyond the capability of the utility. Recovery times may exceed one week, large costs involved, large amount of mutual aid will be necessary, and declaration of emergency is required. Natural or human-caused disasters cause severe disruption of services and severe health risks.

6.1. Incidents and Severity Rating

	**For incidents rated:**	Routine Minor	It is <u>not</u> mandatory to call your Drinking Water Officer, but you may do so, if you wish
		Major Disaster	Call your Drinking Water Officer **<u>immediately</u>** or call 24-hour Emergency Line (944-4888), if he/she cannot be reached

Description of Potential Incidents at the Water Facility and Distribution System	Severity Rating  *Routine / Minor / Major /Disaster*
Loss of chlorine residual at the water plant (water leaving the plant has less than 0.1 mg/l free chlorine)	Major
No chlorine residual in the distribution system	Major
Increased turbidity out of the filter (over 0.5 NTU)	Minor to Major
Bacterial contamination of treated water (different degrees of contamination from mild to severe)	Routine to Disaster
Other treatment process failure (coagulation, or other important process)	Routine to Major
Distribution pumps' failure (one or more pumps fail; distribution pressures drop)	Minor to Major
Power outage	Minor to Major
Flooding of the water plant (from minor flood to reservoir compromised; entire plant failure)	Minor to Disaster
Contamination of the source (chemical spill, transport accident, other human-caused incidents)	Minor to Disaster
Loss of water source	Major
Mainline break (backflow, back-siphonage, significant pressure drop)	Major
Outbreak of waterborne disease	Major to Disaster
Loss of primary and back-up operators due to pandemic flu	Major to Disaster
Customer complaint	Routine to Major

6.2. Emergency action chart



7. EVALUATION AND TRAINING

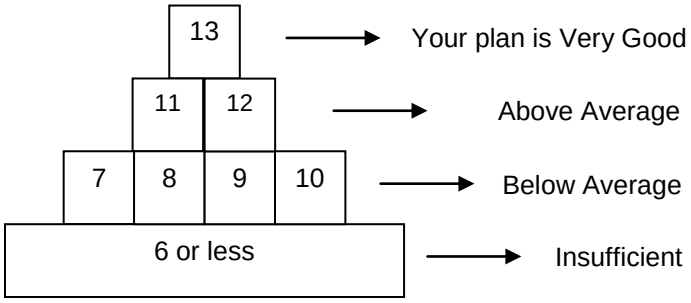
An evaluation process of the emergency response plan should be done as soon as the plan is completed and every two years thereafter. Also, after an emergency, there should be a "lessons learned" evaluation process to identify shortcomings. The ERP and response actions must be modified accordingly.

7.1. Self-Evaluation

Complete this evaluation questionnaire by placing a "✓" under "Yes", or "No" option:

No.	Question	Yes	No
1	Has your utility, or municipality had an Emergency Plan before?		
2	Are all of your response/recovery plans in one document?		
3	Do you require that your Emergency Response Plan (ERP) be updated every year?		
4	Does your utility, or municipality have an Emergency Coordinator?		
5	Is your utility, or municipality involved in any mutual assistance agreements with other utilities, or municipalities?		
6	Does your ERP provide directions for personnel safety?		
7	Has your ERP ever been tested since it was developed?		
8	Does your ERP correctly identify and characterize system components?		
9	Does your ERP identify alternative sources of clean water, if you're unable to supply?		
10	Does your ERP identify equipment that can be used to mitigate impact in emergencies?		
11	Do you know the likely response time of police, fire, and other emergency teams?		
12	Do you have an emergency training program for your personnel?		
13	Do you have testing procedures with staff to maintain professional competency?		

Count how many questions you answered "YES" and compare with the diagram below:



7.2. Training

Emergency planning and response is difficult and resource-intensive. To be successful in minimizing harmful effects of emergencies and restoring normal operations requires training. It is crucial to provide training programs for water utilities staff, either in-house, or through outside sources. The purpose of training is to: a) educate staff about hazards and their impact on the system and, b) practice emergency response.

The Government of Manitoba, pursuant to *The Environment Act*, Article 30(1) of Regulation 77/2003 "Water and Wastewater Operators Facility Regulation" may require

that water plant operators undergo in-service training, which may include emergency preparedness. As part of developing in-house training or participating in other courses, consider system size and complexity, probable emergencies, type of staff to undergo training, etc. Municipalities' Emergency Coordinator may contact Emergency Measures Organization (EMO) for a professional opinion on emergency management courses, training materials, etc. Your local Drinking Water Officer may also be able to assist you with information.

Office of Drinking Water general phone: (204) 945-5762

Office of Drinking Water website: http://www.gov.mb.ca/waterstewardship/odw/

EMO general office phone: (204) 945-4772

EMO website: http://www.gov.mb.ca/emo/

7.3. Operational drills

These drills start with an emergency scenario and involve staff responding to the site who may be involved in that emergency. Internal and external communications may be tested. Suggested frequency of drills is annually. Drills are usually conducted locally, sponsored by city or town, fire or police department, and other affected organizations. Larger scale drills may be focused on one or more specific hazards. Get involved – find out where such drills take place and think about conducting your own drills by acting one or more scenarios to determine vulnerabilities.

7.4. Occurrence evaluation

Once a drill or a response to a real-life incident is completed, the water utility should prepare an after-event evaluation report. The report should address issues, actions, responses, recommendations, and conclusions. This report can serve as a model for future responses to emergencies and appropriate courses of action.

8. Examples of Potential Emergency Scenarios and Typical Responses

NOTE: These examples are provided for illustration purposes only and may not be suitable or representative of your particular water system. The type and extent of your response will vary with the size of your system, technology available, type of water source and other factors.

SCENARIO 1: Chemical spill – Hydrocarbon contamination.
Town "A" relies on four wells for water supply, which are located South and West of the town. A large diesel fuel storage tank ruptures affecting two of the nearby wells. Hydrocarbon contaminants are suspected to have entered the aquifer posing a risk to groundwater and, subsequently, to the drinking water supply.

Response: The Town activates the Emergency Response Plan alerting the local Drinking Water Officer and the Environment Officer. Police and Fire Department are also alerted. Following their advice, the closest wells downhill of the spill area will be isolated from the supply system.

The Town requests help from neighboring municipalities that they have written agreements with. Water deliveries by tanker trucks are arranged. Bottled water is being provided. Local contractors are hired to repair the fuel storage tank. The Town starts sampling and monitoring the affected wells. Contamination levels in the well water are found to be high. A decision is made to keep those wells isolated from the system until contamination levels subside. This could take several months.

The Town imposes restriction on non-essential major water users. Irrigation of lawns and gardens is prohibited. More restrictive water rationing measures are prepared. The remaining unaffected wells are being used at peak capacity, thus, drawing down the groundwater table. This is not sustainable and the Town taps into emergency funding and starts drilling another well. The Town hires a consultant specialized in hydrocarbon contamination and soil remediation.

The Town organizes regular meetings with all emergency preparedness structures and the Office of Drinking Water. The situation is monitored constantly and all parties involved are kept informed. Record-keeping is detailed. The situation is evaluated repeatedly and decisive actions facilitate a return to normal conditions. Lessons are drawn and the Emergency Response Plan is updated accordingly. Staff go through additional training.

SCENARIO 2: Bacterial contamination: Routine bacteriological sampling carried out by Town "B" reveals that one of their distribution system samples shows high number of total coliform and presence of E. coli bacteria. The Office of Drinking Water has notified the Town office of this contamination. Cause for concern is a recent pressure drop in the distribution network due to a pump failure. As a precaution, the Medical Officer of Health issues a Boil Water Advisory (BWA) for the water system.

Response: The Town activates the Emergency Response Plan. The BWA is broadcast in the local radio and TV station. The contents of the BWA are sent to the local paper for urgent publishing. Telephone notification and/or loudspeakers are also considered to ensure that all residents are notified. The water plant operator increases chlorine dosage and re-samples.

The Town and the Office of Drinking Water evaluate the cause(s) of the contamination. An undetected pipe break has allowed intrusion of debris into the system during a recent distribution pump failure that triggered negative pressures in the network.

The Town undertakes immediate repair work on the damaged pipe. The re-sample has failed, thus, confirming the previous result. More samples are collected throughout the distribution network. After the repairs are completed, a flushing program in carried out in different spots. Chlorine levels are checked several times a day, as well as with each sample taken. Bottled water is provided to schools, daycares, and the hospital.

Te extensive round of samples confirms the network is free of contamination. The aggressive flushing program and increased chlorination levels are deemed successful and the Medical Officer of Health rescinds the BWA. The Town evaluates the response and draws lessons. The Emergency Response Plan is updated. Additional training is planned for the town staff.

SCENARIO 3: Flood conditions: Extensive flooding has occurred in the area. The water plant is compromised. Most of the water distribution network is under water. Chemicals stored at the plant may have been affected. The control panel and pump motors are believed to be under water. Flood water has likely entered the reservoir through the floor hatch.

Response: The Town activates the Emergency Response Plan. The Drinking Water Officer and the Public Health Inspector are involved. A BWA is placed on the system. Residents are notified to boil water. Manitoba Hydro is alerted and asked to cut power supply to the water plant. Only after Hydro confirms the power cut, the Town crews enter the water plant to assess the damage.

The Town requests assistance from neighboring municipalities. Tanker trucks are brought in. Large quantities of bottled water are brought in and distributed as needed. Part of the population is evacuated to higher grounds.

After flood waters recede, an electrical contractor is hired to return functionality to the electrical system at the water plant. Once power is back on, a specialized cleaning crew cleans and sanitizes the reservoir as recommended by the Drinking Water Officer. A thorough flushing and chlorination of the distribution network is done. An extensive sampling program is carried out. The BWA will remain in place for as long as the Medical Officer of Health and the Drinking Water Officer deem it necessary.

Regular meetings are held and updates on the situation are provided to the Drinking Water Officer. BWA is rescinded. The Town updates the Emergency Plan. Lessons are learned and teams are trained.

SCENARIO 4: Pandemic flu or similar outbreak: Flu has hit the town hard. Many people, including public works staff are affected. Those not affected are taking care of their family members. Both, primary and back-up operator have not shown for work. The water utility has only two operators and the water plant is running unattended.

Response: The Town activates the Emergency Response Plan. The Drinking Water Officer and the Public Health Inspector are notified of the absence of operators. The Town has a Memorandum of Understanding (MoU) with neighboring rural

municipalities (RMs) that facilitates sharing of staff during an emergency. The MoU details the conditions for the involvement of operators. Operators from the signatory members of the MoU are knowledgeable of each others' water plants because of training and exchange work in their respective facilities, while in preparation for such emergencies. A neighboring RM is notified and operators are asked to perform indispensable tasks related to water treatment and distribution. Their involvement in the affected town is not likely to be more than a few hours a day. The Medical Officer of Health advises of steps that must be taken to ensure the temporary operator does not get sick. The affected town also contacts the Association of Municipalities asking of the availability of other certified operators, in case the situation of emergency is prolonged.

After seven days, the primary operator returns to work and the commitment of the operator from the neighboring RM is scaled back. The situation returns to normal. Lessons are learned and the MoU is revised.

This document is available online:
http://www.gov.mb.ca/waterstewardship/odw/