



**Saskatchewan
Ministry of
Environment**

Adverse Drinking Water Quality Incident and Bacteriological Follow-up Standard

EPB 505

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Executive Summary

The Water Security Agency (WSA), Ministry of Environment (MOE), the Saskatchewan Health Authority (SHA), the Saskatchewan Ministry of Health (MOH), regulated clients (water system owners), and analytical laboratories are involved in the response to adverse drinking water quality events including, but not limited to, the detection of bacteria in drinking water supplies. This document summarizes the intent, rationale, responsibilities and scope of activities of the agencies involved in monitoring the safety and quality of drinking water delivered from water systems regulated by the WSA and MOE. The goal of the document is to ensure the response to these events is appropriate, consistent, and protects human health.

This document is to be applied to WSA and MOE “human consumptive use” regulated water systems, however it may be helpful when dealing with problems in “hygienic use” water systems.

In order to provide the safest possible drinking water to consumers, a multi-barrier approach is necessary. This includes source water protection, effective and proven treatment methods to physically remove pathogens and contaminants, disinfection to destroy/inactivate pathogens, proper operation and maintenance of the waterworks, comprehensive drinking water quality monitoring programs, trained and competent operators, and appropriate abatement and enforcement measures.

When adverse water quality events occur, it is the responsibility of the WSA, MOE and SHA to protect the public’s health by requiring clients to notify residents of risks and take the necessary corrective actions. This is accomplished by issuing Emergency Boil Water Orders (EBWOs) and Precautionary Drinking Water Advisories (PDWAs) which require consumers to boil their tap water prior to consumption. In some cases, if the concern with drinking water quality cannot be remedied by boiling, a Do Not Use Advisory or a Do Not Consume Advisory may be issued.

Routine bacteriological sampling of drinking water occurs at every WSA and MOE regulated facility in the province. The monitoring of microbiological quality of drinking water is a critical component in protecting the health of those persons consuming drinking water from municipal, industrial and other communal water treatment and distribution systems. Analysis is presently conducted for total coliform, *Escherichia coli* (*E.coli*) bacteria and background bacteria growth. Bacteriological water quality standards include zero detectable total coliform bacteria per 100 milliliters (mL), zero detectable *E. coli* bacteria per 100 ml and background bacterial levels of less than 200 organisms per 100 mL or no overgrowth. On occasion positive test results are returned from bacteriological samples and appropriate response is required to determine the extent and nature of the bacteriological problem. This document outlines the response by agencies and clients when such positive tests occur and when and if PDWA’s and EBWO’s need to be issued.

Clients operating drinking water facilities are obligated to report to the WSA and MOE any conditions in their waterworks that may adversely impact drinking water quality and safety. These events can range in severity and extent and require the knowledge and experience of Environmental Project Officers (EPO) to deal with in an appropriate manner. In many cases follow up sampling and monitoring may be all that is required, but if water safety has been impacted and cannot be guaranteed to be safe, EPO’s may have to issue PDWA’s or Do Not Use or Do Not Drink Advisories. WSA, MOE and the SHA work with these clients to ensure all appropriate remedial action is conducted and appropriate sampling is done to confirm the hazard has been remedied. Once completed the WSA, MOE and SHA can then be confident to rescind the advisory or order.

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Table of Contents

Executive Summary	2
Acronyms and Abbreviations	6
Definitions	7
1. Introduction.....	9
2. Roles and Responsibilities	10
3. Ensuring Drinking Water Safety	11
3.1 Source to Tap Protection of Waterworks	11
3.2 Response to Adverse Events	12
3.2.1 Emergency Boil Water Orders	13
3.2.2 Precautionary Drinking Water Advisories.....	13
3.2.3 Precautionary Drinking Water Advisories – “Do Not Drink” or “Do Not Use”	13
4. Bacteriological Sampling and Follow Up.....	14
4.1 General.....	14
4.2 Methods for Analyzing Bacteriological Samples	14
4.3 Regular Samples	15
4.3.1 Regular Samples – Positive Results.....	15
4.3.2 Regular Samples – Positive TC, OG or >200 Background Bacteria.....	15
4.3.3 Regular Samples – Positive <i>E.coli</i>	15
4.3.4 Regular Samples – Negative TC, OG, <200 Background Bacteria and <i>E.coli</i>	15
4.4 Repeat Samples.....	15
4.4.1 Repeat Samples – Positive Results.....	15
4.4.2 Repeat Samples – Positive TC or OG or >200 Background Bacteria	16
4.4.3 Repeat Samples – Positive <i>E.coli</i>	16
4.4.4 Repeat Samples – Negative TC, OG, <200 Background Bacteria and <i>E.coli</i>	16
4.5 Special Samples	17
4.5.1 Special Samples – Positive Results.....	17
4.5.2 Special Samples – Positive TC or OG or >200 Background Bacteria	17
4.5.3 Special Samples – Positive <i>E.coli</i>	17
4.5.4 Special Samples – Negative TC, OG, <200 Background Bacteria and <i>E.coli</i>	18
4.6 Other Samples	18
4.6.1 Other Samples – Positive Results	18
4.6.2 Other Samples – Positive TC or OG or >200 Background Bacteria	18
4.6.3 Other Samples – Positive <i>E.coli</i>	19
4.6.4 Other Samples – Negative TC, OG, <200 Background Bacteria and <i>E.coli</i>	19
5. Upset Conditions that Result in PDWAs	19
5.1 Self-Managed PDWA’s.....	20
5.2 Waterworks Start Up.....	20
5.3 Contamination Not Remedied by Boiling	20
5.4 Service Connections	21
5.5 Planned Upset Events.....	21
5.6 Notifications to SHA of PDWA due to Upset Conditions.....	21
5.7 Upset Condition – PDWA Actions Summary.....	22

6. Rescinding a PDWA or EBWO	22
7. Media and Public Communication	23
Appendix A - Process Flow Diagram of Actions to be taken by the WSA, MOE, SHA, Saskatchewan Ministry of Health, and Analytical Laboratories	25
Appendix B - Sample Procedure for Bacteriological Quality	30
Appendix C - Positive Bacteriological Follow Up Procedures	31
Appendix D - Sample Letter for Issuance of PDWAs.....	39
Appendix E - Sample Letter for Rescindment of PDWAs	40
Appendix F - Model of a Precautionary Drinking Water Advisory Posters (English/French/Do Not Drink Notice/Do Not Use Notice)	41
Appendix G - Emergency Boil Water Order and an Emergency Boil Water Notice.....	45
Appendix H - Guidance for Using CNPHI.....	46
Appendix I - List of Contacts for WSA, Saskatchewan Ministry of Health and the SHA	47
Appendix J PDWA and EBWO - Communications Protocol for WSA, MOE, SHA and Clients.....	49

Glossary of Symbols, Acronyms and Abbreviations

AWWA	American Water Works Association
CNPHI	Canadian Network for Public Health Intelligence
DBP	Disinfection Byproducts
EBWO	Emergency Boil Water Advisory
EMPA, 2010	<i>The Environmental Management and Protection Act, 2010</i>
EPO	Environmental Project Officer
MHO	Medical Health Officer
MOE	Saskatchewan Ministry of Environment
MOH	Saskatchewan Ministry of Health
OG	Overgrowth of Background Bacteria
PDWA	Precautionary Drinking Water Advisory
PHI	Public Health Inspector of the Saskatchewan Health Authority
PHMC	Provincial Hazardous Materials Coordinator of the Ministry of Environment
SHA	Saskatchewan Health Authority
TC	Total Coliform
WSA	Water Security Agency
WSA CCS	Communication and Client Services of the Water Security Agency
WSA EBSU	Environmental Business Systems Unit of Water Security Agency
WWSWR	<i>The Waterworks and Sewage Works Regulations</i>

Definitions

“Adverse Drinking Water Quality” – Water produced and or distributed through a client’s waterworks that may have the immediate potential for putting user’s or consumer’s health at risk.

“Client” – the owner of a waterworks regulated by WSA or MOE that is subject to EMPA, 2010 and WWSWR.

“Do Not Drink Notice” – a type of PDWA issued by WSA when the water contains a chemical contaminant that cannot be removed by boiling and is not harmful on contact or inhaled.

“Do Not Use Notice” - a type of PDWA issued by WSA when the water contains a chemical contaminant that can be harmful on contact or inhaled, or if a waterworks has been tampered with and the possibility exists of introduction of an unknown contaminant into the water supply.

“Drinking Water Advisory/Notification” – a type of advisory utilized by a WSA client to notify residents of potentially adverse water quality.

“Emergency Boil Water Order” - (EBWO) is an order issued by the MHO (or designate) of the SHA pursuant to section 25 of *The Public Health Act, 1994*, when the SHA and the EPO determine that a threat to public health exists.¹

“Human Consumptive Use” – is a water supplied by a waterworks that is used for human consumption including drinking, cooking and food preparation and oral hygiene.

“Hygienic Use” – is a water supplied by a waterworks that is used for hygienic purposes by humans including bathing, showering, and personal hygiene.

“Hygienic” sample(s) - is a bacteriological water sample(s) taken in a hygienic waterworks system to fulfill the sampling requirement as stated in the Permit to Operate a Waterworks issued to the system owner or municipality/owner. Follow-up is treated the same as a “Regular” sample.

“Other” sample(s) – is a **bacteriological** water sample(s) taken in a waterworks in follow up to an upset condition, a maintenance activity, a seasonal start up of a waterworks, a commissioning of new works or an inspection activity.

“Positive” bacteriological result - is a test result indicating unacceptable levels of bacteria per 100 millilitres (mL) of sample volume in accordance with the following criteria:

- 1 or more total coliforms (TC); or
- 1 or more *Escherichia coli* (*E.coli*); or
- overgrowth (OG) or >200 colonies of background bacteria.

“Precautionary Drinking Water Advisory” - (PDWA) is an advisory issued under the authority of subsection 36(1) of EMPA, 2010 by an EPO when the EPO determines that drinking water quality concerns exist but immediate public health threats have not been identified.¹

“Regular” sample(s) - is a bacteriological water sample(s) taken in a waterworks system to fulfill the sampling requirement as stated in the Permit to Operate a Waterworks issued to the system owner or municipality/owner.

“Repeat” sample(s) – is a bacteriological water sample(s) taken when the “Regular” sample(s) have been identified/tested “positive”. The “Repeat” sample is to be collected from the same location at which the original positive “Regular” sample(s) was collected.

¹ In the event that the EPO or SHA cannot get a hold of one another they have the authority to issue on their own. Should this occur the issuing agency shall notify the other of the issuance as soon as possible.

“Special” sample(s) – is a bacteriological water sample(s) taken when the “Repeat” sample(s) have been identified/tested “positive” or when samples are being collected in follow up to the issuance of a PDWA or EBWO as a result of a positive bacteriological sample(s). For every one (1) “positive” repeat sample, a minimum of three (3) “special” samples are required; one (1) taken from the same location at which the “Repeat” sample was collected; one (1) taken from an area in the waterworks upstream of the “positive” sample and one (1) taken from an area in the waterworks downstream of the “positive” sample.

“Service Connection” - is a pipe that connects a water main or sewer main to a premise.

“Upset Condition” – is any abnormal conditions, anomalies, or interruptions in the treatment process or the distributions system within a waterworks that may have any adverse effect on the quality of water supplied to consumers.

“Waterworks” - is any works designed to supply, collect, treat, store or distribute water that is intended or actually used for human consumption or hygiene, regardless of whether any other uses have been made of that water; and is designated in section 18 of the WWSWR. Waterworks are subject to comply with EMPA, 2010, the WWSWR, and the Permit to Operate a Waterworks issued pursuant to EMPA, 2010.

1.0 Introduction

WSA and MOE sets standards, guidelines, objectives and monitoring requirements for WSA and MOE regulated waterworks. WSA and MOE expects municipalities and owners of waterworks systems regulated by them to comply with WWSWR, their Permit to Operate a Waterworks and any additional orders, directives, or requirements issued by WSA, MOE or SHA.

WSA and MOE work with SHA and use a case by case risk management approach that considers factors such as source water, treatment, distribution system, cross-connections in the building plumbing system and an operator's level of skill when dealing with water quality concerns.

In order to provide the safest possible drinking water to consumers, all aspects of a multi-barrier approach are necessary. The aspects of a multi-barrier approach include, source protection, utilization of a proper treatment process, good operation and maintenance of waterworks, comprehensive drinking water quality monitoring program, trained and competent operators, and appropriate abatement and enforcement measures.

Water samples taken from WSA and MOE regulated systems in the province may show the presence of bacteria from time to time. Positive bacteriological samples, in many cases, do not necessarily mean that there is a serious problem with the drinking water; it can be an isolated event caused by a sampling problem. However, when a test result indicates the presence of bacteria, actions need to be taken to ensure that the drinking water is safe for consumption.

Regulated waterworks in the province are also obligated to immediately report "upset conditions" to WSA or MOE. These events could be any condition in a water source, treatment process, or distribution system that could adversely affect the treated water quality and safety. Regulatory officials determine the appropriate response based on the severity and risk associated with the event.

This document outlines steps that WSA, MOE, SHA, Laboratories' and the Ministry of Health need to take to abate the risk associated with positive bacteriological results and other adverse water quality events. This document is to be applied to WSA and MOE "human consumptive use" regulated systems and the alternative source of safe drinking water provided as the alternate supply portion of a "hygienic use" waterworks. This document does not apply to bottled water or bottling facilities, private waterworks not captured by WWSWR, plumbing within a building or on the premises of a service connection or SHA regulated water supplies. This document may not apply to all portions of a system that is shared by a Municipality and a First Nation. For shared systems, bacteriological follow-up procedures will be dealt with through separate protocols developed by EPOs, SHAs, First Nations Authorities and Health Canada.

There are a number of "human consumptive use" regulated systems that have been placed on a long standing PDWA due to lack of minimum treatment and are unable to ensure a safe supply of drinking water at all times. There are also approximately 150 "hygienic use" waterworks in the province that typically serve a small population and lack the ability to treat water to human consumptive standards. The owners of these systems are still required by their Permit to Operate a Waterworks to submit routine bacteriological samples. The follow-up actions by EPOs will vary on a site-specific basis and will not necessarily follow this protocol for "Repeat" and "Special" sampling at all times, particularly if treatment deficiencies in the waterworks are known. In such events however, follow-up actions will always be documented.

It should be noted that it is the responsibility of the client to continue to ensure that "Regular" samples for bacteriological analysis must still be collected during all positive bacteriological follow-up procedure incidents.

Notwithstanding this protocol, a PDWA or an EBWO can be issued anytime a condition or a problem with the waterworks is identified.

2.0 Roles and Responsibilities

Clients (Waterworks Owners/Operators - Municipalities/Industries/Co-ops/Private Utilities/Parks)

The clients or owners of waterworks regulated by WSA and MOE are responsible for ensuring that safe and potable water is provided to consumers. Clients are required to monitor the quality of the drinking water, and subject to Section 34 of WWSWR, must immediately report to WSA and MOE any known or anticipated process upset, bypass conditions, operational anomalies in a waterworks, any instance where disinfection equipment fails or where the level of disinfection required is not achieved or anticipated to be achieved. They are also required to act on direction or advice from EPOs and the SHA to resolve water treatment/distribution problems or to prevent health hazards. If an issue of water quality or safety is determined, waterworks owners have the responsibility to ensure residents/users/subscribers are notified in a timely and effective manner of the water quality issue, and what users must do to protect their health and wellbeing; namely follow the conditions/directives laid out in PDWAs and EBWOs issued by WSA and SHA. Often times the client is represented by the waterworks operator, the administrator or the elected head (Mayor, Reeve, President, etc.); however, they all act on behalf of the client (Permittee).

Water Security Agency/Ministry of Environment

WSA Environmental Business Systems Unit (WSA EBSU) staff receive analytical results from laboratories, record these results in WSA's database and immediately report all positive bacteriological results to the EPOs. In addition, during the work week, the WSA EBSU also reports the negative results for "Repeat", "Special" and "Other" samples to the EPOs on a daily basis.

Upon receipt of positive bacteriological results of "Regular" samples, EPOs will advise the clients of the need to obtain "Repeat" bacteriological samples from the positive sample location. EPOs will obtain information from facility operators regarding the sample collection location and methodology and any recent waterworks operational issues (e.g. recent water treatment plant operational upsets, water main breaks, status of the disinfection equipment and disinfectant levels, etc.). EPOs will also provide advice to owners/operators on steps and methods to resolve bacteriological water quality concerns and will conduct inspections of facilities when deemed necessary. If the evidence collected suggests a broader water quality issue, an EPO may choose to issue a PDWA or consult with SHA on the issuance of an EBWO. Upon receipt of positive results of "Repeat", "Special", or "Other" bacteriological samples, EPOs will conduct a more in-depth investigation and request additional sampling from clients in order to pinpoint the cause of the bacteriological event.

If EPOs have been advised by clients regarding upset conditions occurring during the operation of a waterworks that could potentially impair water quality and pose a risk to public safety, EPOs may choose to issue PDWAs or consult with SHA on the issuance of an EBWO. Should a PDWA or EBWO be issued, the EPO will arrange contact with clients to discuss the required corrective actions and follow-up sampling associated with the PDWA or EBWO. If the nature of the upset condition warrants, the PDWA may direct consumers, to "Do Not Drink" or "Do Not Use" distributed water, if boiling the water does not remedy the hazard associated with it or the contaminant is harmful on contact or inhaled. EPOs are responsible for issuing PDWAs, and notifying SHA on the occurrence of positive bacteriological results or waterworks operational concerns surrounding the issuance of PDWAs. EPOs are responsible to ensure all PDWAs and EBWOs issued to clients are posted on the "Drinking Water Advisories" section of the Canadian Network for Public Health Intelligence (CNPHI) website (See Appendix H). EPOs will communicate with and may consult with SHA staff when considering the rescindment of EBWOs or PDWAs. WSA CCS handle media inquiries regarding PDWAs and in some cases EBWOs.

WSA and MOE EPOs, while acting as regulators of clients, also aid clients and operators in resolving operational problems and can provide technical assistance.

Laboratories

Laboratories provide analysis of "Regular", "Repeat", "Special" and "Other" samples collected by the owners/operators of waterworks regulated by WSA and MOE and reports these results on a prompt basis to owners and the WSA. The laboratory will immediately contact an MHO of the SHA (On-Call List provided by Ministry of Health) and WSA EBSU in the event of a positive *E.coli* test.

Saskatchewan Health Authority

SHA staff including PHIs and MHOs work with EPOs at various stages of response to adverse water quality events to determine if risks to public health exist as indicated by drinking water sample test results and occurrence of disease outbreaks. SHA staff will always discuss the issuance of EBWOs with EPOs. In some cases, EPOs will consult with the SHA regarding the issuance of PDWAs, specifically when there are hospitals or public facilities affected, there is a known acute risk to consumers, or a significant population are impacted. SHA staff will also be in contact with the municipalities/owners to discuss the required actions associated with EBWOs. MHOs or their designates are responsible for the issuance of EBWOs, in consultation with EPOs. The SHA will immediately notify the Ministry of Health of the issuance of an EBWO. SHA PHIs may investigate plumbing at specific sites where necessary to determine if cross-connections occur. SHA staff work in consultation with EPOs when considering rescinding EBWOs and in some cases PDWAs.

Saskatchewan Ministry of Health – Population Health Branch

The Saskatchewan Ministry of Health is responsible for *The Public Health Act, 1994* and pursuant regulations. Officials with the Saskatchewan Ministry of Health work with the SHA, WSA, and MOE to develop policies and protocols for drinking water in Saskatchewan. The Ministry of Health provides the WSA with information related to program delivery including but not limited to the MHO and PHI on-call listings. The Ministry of Health is responsible for overseeing the Saskatchewan Health Authority's delivery of programs.

3.0 Ensuring Drinking Water Safety

3.1 Source to Tap Protection of Waterworks

Eliminating pathogens and contaminants and ensuring delivery of safe water to user's taps is the primary focus when treating and operating public water supplies. The most common form of disease from waterborne pathogens is gastrointestinal illness. The onset of this ailment, as a result of drinking contaminated water, is sudden. Related health outcomes are not restricted to diarrhea; they can include other illnesses such as reactive arthritis, meningitis, impairment of neurological development and hemolytic-uremic syndrome. In extreme cases, ingestion of pathogens can lead to death; some pathogens have mortality rates as high as 1 per cent of cases. This contrasts with most chemical contaminants (many of which have established guidelines), as no acute health effects are sustained from chemical substances at the levels normally found in treated drinking water.

In order to provide the safest possible drinking water to consumers, all aspects of the multi-barrier approach are necessary. These aspects include; source water protection, effective and proven treatment methods to physically remove pathogens and contaminants, disinfection to kill/inactivate pathogens, effective operation and maintenance of the waterworks; comprehensive drinking water quality monitoring programs, trained and competent operators, and appropriate abatement and enforcement measures.

Source Protection – Intake works and wells should be properly located and constructed to protect against contaminants that will be present regardless of protection measures. Surface water and groundwater should be protected through control of waste disposal and restricted land use. Land management practices, watershed/well protection (e.g. well decommissioning) and associated assessment and monitoring activities also play a key role in protecting the integrity of drinking water sources.

Treatment – Appropriate treatment including disinfection of drinking water supplies is crucial with respect to immediate health protection. The recommended minimum treatment requirement for all surface water includes coagulation-flocculation, sedimentation, filtration, taste/odour control and disinfection. Although taste and odour control is an aesthetic process requirement instead of a health related one, it often has a major impact on the public's view about the safety of the drinking water. The public often rejects highly coloured water and may choose alternative supplies, some of which may be of questionable safety. The recommended minimum treatment requirement for groundwater includes continuous disinfection. Special or uncommon treatment process such as lime softening, demineralization, etc., must be evaluated on a case by case basis.

Operation and Maintenance – Utility operators should adhere to recognized operation and maintenance programs to ensure that all aspects of the waterworks (source, treatment and distribution) are operating optimally. Distribution system programs should include maintenance of appropriate pressure regimens, main assessment, cleaning, repairing and replacement, leak detection and cross-connection control. Industrial customers should be advised of cross-connection control concerns. Programs must also include provisions for operator training/ certification and the assessment of operational needs of a waterworks.

Monitoring – System owners should verify the efficacy and the liability of their waterworks by routinely and systematically conducting water quality monitoring (microbiological, chlorine residual, turbidity and other chemical parameters) and evaluating treatment components. The minimum monitoring requirements are specified in the Permit to Operate a Waterworks.

3.2 Response to Adverse Events

When all the above public health principles are in place and a system failure or emergency occurs, rapid communication with the client/community is crucial. Problems requiring immediate attention include drinking water samples which test positive for microbiological contaminants, chemical contamination, failure of disinfection or treatment equipment, upset operational conditions, and vandalism or intentional contamination. These problems may warrant actions such as the issuance of an EBWO or a PDWA. EBWOs are issued under the authority of section 25 of *The Public Health Act, 1994* by the MHO or designate of the local SHA Public Health Services Office, in consultation with the WSA or MOE EPOs, when a threat to public health exists. PDWAs are issued under the authority of subsection 36(1) of EMPA, 2010 by the EPO with notification to SHA when there is a concern or problem with water quality that may exist, but the immediate public health threats have not yet been identified.

The intent of a PDWA or EBWO is to protect the users of the water supply from the health risks associated with consuming or using a water supply that is suspected or confirmed to be contaminated. The boiling of impacted water will address any concerns with bacteriological, viral or protozoal contamination by inactivating or eliminating viable pathogens. If bacteriological tests show that *E. coli* is present in the treated water, then the water is very likely contaminated with human or animal fecal matter and pathogenic microorganisms may be in the water. If it is determined that the water sample was collected properly, then an EBWO should be issued immediately.

The mere presence of parasitic cysts or oocysts in treated drinking water is not usually sufficient justification for issuing an EBWO or a PDWA. Because the current methods for the routine detection of cysts or oocysts do not measure viability or human infectivity, their public health significance is unknown. Nevertheless, the presence of cysts or oocysts in drinking water receiving full conventional treatment may indicate inadequate filtration, a malfunction in treatment or penetration of sewage into the distribution system. In such cases health officials may wish to monitor the public for the associated gastrointestinal illnesses before considering issuance of an emergency boil water order or a precautionary drinking water advisory. Certain parasitic illnesses such as cryptosporidiosis, may pose a more serious threat to people who have weakened immune systems. Severely immunocompromised individuals should be advised to discuss these risks and remedial measures with their physicians.

The confirmed presence of TC, OG, or >200 of background colonies in drinking water indicates that treatment may be inadequate, or the distribution system is experiencing bacterial re-growth problems or infiltration. TC are not necessarily an indication of the presence of fecal contamination; however, the presence of TC in drinking water certainly demonstrates a health risk. If remedial measures such as flushing water mains and increasing chlorine residuals do not correct this problem, then the local SHA Public Health Services Office and the EPO may wish to discuss the issuance of a PDWA advising the public to boil their drinking water.

There are certain water quality problems that cannot be rectified by boiling. For example, boiling will not destroy the heat-stable cyanobacterial toxins, DBPs, nor reduce or eliminate metals or radionuclides. For these situations, the most appropriate position to take is that boiling has not been shown to reduce the health risks related by these parameters of concern and therefore cannot be recommended as a solution at the present time. In these case PDWAs with the added caveat of “Do Not Drink” or “Do Not Use” may be an effective means to protect public health.

3.2.1 Emergency Boil Water Orders

EBWOs should only be issued to mitigate confirmed public health threats due to microbial contamination of drinking water. EBWOs should be issued on evidence of:

- confirmed presence of *E.coli*;
- confirmed verification of problems identified through the positive follow-up procedure questions and/or an inspection; or,
- where epidemiological evidence indicates that the drinking water is responsible for an outbreak of illness (such as gastrointestinal illnesses).

3.2.2 Precautionary Drinking Water Advisories

PDWAs could be issued when there is a concern that upset conditions, operational problems, or startup of seasonal or new works may impact water quality. In a case of possible microbial contamination, the PDWA should be used to advise the public to boil the water. PDWAs should be issued on evidence of:

- significant deterioration in source water quality (i.e. high turbidity due to runoff and other events);
- persistently low chlorine/disinfectant residuals (i.e. <0.5 mg/L of total chlorine residual and <0.1 mg/L of free chlorine residual) in the distribution system;
- the bacteriological monitoring results show persistent total coliforms and overgrowths;
- lack of adequate treatment component(s) or equipment malfunctions in the treatment plant or disinfection system;
- microbial contamination within the distribution system;
- the human consumptive portion of a hygienic use system shows the presence of bacterial contamination;
- de-pressurization of a portion or all of the distribution system;
- waterworks start-up of new works, new components or seasonal systems;
- violations of monitoring, reporting or Permit to Operate a Waterworks conditions;
- protozoan or invertebrate contamination;
- loss of certified operator; and
- loss of sanitation during repairs/maintenance.

3.2.3 Precautionary Drinking Water Advisories – “Do Not Drink” or “Do Not Use”

PDWAs advising residents to “Do Not Drink” or “Do Not Use” can be issued when there are hazards associated with contacting the water, inhaling its vapour or when boiling does not rectify the hazard. In these cases, the public will not be advised to boil the water but may be advised to look for alternative water sources of confirmed acceptable quality.

PDWAs advising “Do Not Drink” should be issued on evidence of:

- water treatment chemical overfeed (dependent on chemical and concentration; see Section 5.3);
- elevated health and toxicity water quality parameters.

PDWAs advising “Do Not Use” should be issued on evidence of:

- water treatment chemical overfeed (dependent on chemical and concentration; see Section 5.3);
- hydrocarbon, radiological, pesticide or other serious chemical contamination;
- confirmed acts of vandalism or terrorism where unknown contaminants may have entered the water supply.

4.0 Bacteriological Sampling and Follow Up

4.1 General

Clients operating both human consumptive and hygienic water systems are required to collect routine or “Regular” bacteriological samples representative of the water distributed within their water distribution systems. The frequency and number of bacteriological samples required to be collected by a client is laid out in the client’s Permit to Operate a Waterworks and is dependent on the size (population served) and source water of the client. The document [EPB 202 – Municipal Drinking Water Quality Monitoring Guidelines](#) provides guidance on how monitoring schedules are derived and can be found on www.saskh2o.ca. Clients are required by their Permit to Operate a Waterworks to submit “Regular” bacteriological samples in addition to any samples required by this Standard. The follow-up actions to bacteriological test results by EPOs may vary on a site-specific basis and will not necessarily follow this protocol for repeat and special sampling at all times, particularly if treatment deficiencies in the waterworks are known and being addressed or when dealing with hygienic water supplies. In such events however, follow-up actions will always be documented.

Bacteriological samples can give a general sense of the safety of the water, but the analysis only attempts to identify the presence of and quantify TC, E.coli bacteria and background bacteria in a small representative sample of water at a single point in time. The bacteriological analysis does not measure all harmful pathogens or chemicals that may be present in water such as viruses, protozoa, or metals or toxins. Positive bacteriological samples do not necessarily mean that there is a serious problem with the drinking water; it can be an isolated event caused by a sampling problem. However, when a test result indicates the presence of bacteria, actions need to be taken to ensure that the drinking water is safe for consumption. Consecutive positive bacteriological samples or more than one positive sample in a set of samples strongly reflect the possibility that some type of biological or sewage contamination is present. The methodology for collection of bacteriological samples is laid out in Appendix B.

WSA sets standards for the bacteriological quality of drinking water. The maximum acceptable concentrations for the bacteriological quality are as below:

1. Zero (0) TC per 100 mL; or
2. Zero (0) *E.coli* per 100 mL; or
3. No overgrowth or <200 colonies of background bacteria per 100 mL.

4.2 Methods for Analyzing Bacteriological Samples

Bacteriological Sample Results (Regular, Repeats, Specials or Others)

Laboratories employing membrane filtration methodology using differential coliform medium will perform TC/E.coli analysis on all samples. Because of the methodology employed, overgrowth can still be determined. The laboratory will immediately provide positive TC, E.coli and overgrowth results to WSA during weekdays. The laboratory will immediately provide positive E.coli results to SHA. For weekends, see Section 7.0 – Media and Public Communication. In addition, the laboratory sends (by e-mail or regular mail) test results to clients/municipalities.

Laboratories employing an enzyme substrate coliform test using a multi-tube or multi-well format will perform TC/E.coli analysis using a most probable number (MPN) quantitative measurement method on all samples. The laboratory will immediately provide positive TC and E.coli results to WSA during weekdays. The laboratory will immediately provide positive E.coli results to SHA. For weekends, see Section 7.0 -Media and Public Communication. In addition, the laboratory sends (by e-mail or regular mail) test results to clients/municipalities.

Laboratories employing membrane filtration methodology using M-Endo medium will perform TC analysis on all samples. In the case where the analysis indicates the presence of TC, overgrowth or background bacteria of >200 colonies, the laboratory will perform an E.coli test by swabbing the TC plate. The result from the E.coli test is available 24 hours later and provided to WSA. The laboratory will immediately provide positive TC and E.coli results to WSA during weekdays. The laboratory will immediately provide positive E.coli results to SHA. For weekends, see Section 7.0 – Media and Public Communication. In addition, the laboratory sends (by e-mail or regular mail) test results to clients/municipalities.

The WSA EBSU in Regina obtains bacteriological test results from accredited analytical laboratories on a daily basis. The results are entered into a database and the follow-up procedure, discussed below, will be initiated by WSA if positive results are noted.

All laboratories must mail to clients/municipalities a copy of positive test results within 72 hours of completing the test in accordance with section 39(8)(b) of the WWSW regulations.

4.3 Regular Bacteriological Samples

4.3.1 Regular Samples – Positive Bacteriological Results

The following actions are necessary when a Regular sample has a positive bacteriological result:

- WSA EBSU will notify the responsible EPO by phone and by e-mail: On weekends and after hours, Laboratories will notify the appropriate MHO and On-Call WSA EPO (306-787-9700). If facility is an MOE regulated facility, the WSA On-Call EPO calls the MOE Spill Control Centre to relay the information to the Provincial Hazardous Materials Coordinator (PHMC) (800-667-7525);
- EPO will contact the client to provide direction and request information as outlined in the positive Regular follow-up procedures: (See Appendix C);
- EPO will review/assess the treatment, historical water quality data and file information;
- EPO will determine if an inspection is required based on information gathered in the previous points;
- EPO will determine if a PDWA is required based on information gathered in the previous points; and,
- other follow-up actions are specified below in Article 4.3.2 to 4.3.4.

4.3.2 Regular Samples – Positive TC, OG or >200 Background Bacteria

- WSA EBSU and EPO will follow up as per 4.3.1;
- EPO will request a **Repeat** sample be collected from the same location as the positive Regular; and,
- SHA does not need to take any actions at this time.

4.3.3 Regular Samples – Positive *E.coli*

- The EPO will contact the local SHA Public Health office to discuss the results of the information obtained from the positive Regular sample follow-up procedure, the results of any recent inspections and determine if a PDWA or an EBWO should be issued;
- the MHO of the SHA will issue an EBWO if required or the EPO will issue a PDWA if required;
- if a PDWA is issued the EPO will contact the client to discuss the required actions;
- if an EBWO is issued the MHO and/or the local SHA Public Health office will contact the client to discuss the required actions;
- if a PDWA or an EBWO is issued to a WSA regulated facility, the EPO will advise WSA CCS;
- If an EBWO is issued to a WSA regulated facility, SHA will advise Saskatchewan Ministry of Health;
- if a PDWA/EBWO has been issued, the EPO will advise the client of the **Special** sampling requirements to rescind the advisory/order: (see Section 6.0 Rescinding a PDWA or EBWO);
- if an advisory/order was not issued, EPO will advise the client of the **Repeat** sampling requirements;
- the subsequent test results and the client's remedial actions will be monitored by the EPO; and
- the EPO will keep the SHA Public Health office apprised.

4.3.4 Regular Samples – Negative TC, *E.coli*, No OG and <200 Background Bacteria

- No follow-up actions are required by EPOs or SHA; and
- WSA EBSU will update the database.

4.4 Repeat Bacteriological Samples

4.4.1 Repeat Sample – Positive Bacteriological Results

The following actions are necessary when a repeat sample has a positive bacteriological result:

- WSA EBSU will notify the responsible EPO by phone and by e-mail: On weekends and after hours, Laboratories will notify the appropriate MHO and On-Call WSA EPO (306-787-9700). If facility is an MOE regulated facility, the WSA On-Call EPO calls the MOE Spill Control Centre to relay the information to the Provincial Hazardous Materials Coordinator (PHMC) (800-667-7525);
- EPO will contact client to request information as outlined in the positive Repeat sample follow-up procedures and provide technical advice and direction for remedial actions: (See Appendix C);
- EPO will review/assess the situation based on history and discussions with the client;

- the PHIs and MHO of the local SHA Public Health office will look for evidence of abnormal number of illnesses that could be related to drinking water;
- EPO will determine if an inspection is required based on information gathered in the previous points;
- EPO and the local SHA Public Health office will determine if a PDWA/EBWO is required based on information gathered in the previous points; and
- other follow-up actions are specified below in Article 4.4.2 to 4.4.4.

4.4.2 Repeat Samples – Positive TC, OG or >200 Background Bacteria

- WSA EBSU and EPO will follow up as per 4.1;
- EPO will contact the local SHA Public Health office to discuss the results of the information obtained from the positive Repeat sample follow-up procedures, the results of any recent inspections and determine if a PDWA should be issued, if a PDWA had not been issued during the follow-up of the Regular sample;
- in the event that a PDWA is issued to a WSA regulated facility, the EPO will advise WSA CCS;
- in the event that a PDWA is issued, the EPO will contact the client to discuss required actions associated with the PDWA;
- if a PDWA has not been issued, the EPO will advise the client of the set of **Special** samples required in follow up to the positive sample;
- if a PDWA has been issued, the EPO will advise the client of the two sets of **Special** samples required in follow up to the positive sample: (see Section 6.0 Rescinding a PDWA or EBWO);
- the EPO will request that the client keep them apprised on the progress on the remedial actions;
- the subsequent test results and the client's remedial actions will be monitored by the EPO; and
- the EPO will keep the local SHA Public Health Office apprised of the client's progress on the remedial actions and sample follow up.

4.4.3 Repeat Samples – Positive *E.coli*

- The EPO will contact the local SHA Public Health office to discuss the results of the information obtained from the positive Repeat sample follow-up procedure, the results of any recent inspections and determine if an EBWO should be issued;
- the MHO of the SHA, in consultation with the EPO, will issue an EBWO if required;
- in the event that an EBWO is issued the MHO and/or the local SHA Public Health office will contact the client to discuss the required actions associated with the EBWO;
- in the event that an EBWO is issued to a WSA regulated facility, the EPO will advise WSA CCS and SHA will advise Saskatchewan Ministry of Health;
- If an EBWO has not been issued, the EPO will advise the client of the set of **Special** samples required in follow up to the positive *E.coli*;
- If an EBWO has been issued, the EPO will advise the client of the two sets of **Special** samples required in follow up to the positive *E.coli* (see Section 6.0 Rescinding a PDWA or EBWO);
- the EPO will request that the client keep them apprised on the progress on the remedial actions;
- the subsequent test results and the client's remedial actions will be monitored by the EPO; and
- the EPO will keep the local SHA Public Health office apprised of the client's progress on the remedial actions and sample follow up.

4.4.4 Repeat Sample – Negative TC, *E.coli*, No OG and <200 Background Bacteria

- WSA EBSU staff will notify the EPO via e-mail;
- if an EBWO and/or PBWA was not issued or has been rescinded, then the case is closed, and no further follow-up sampling is required;
- if an EBWO or a PDWA has been issued, then the EPO will:
 - Continue to monitor the test results and the client's remedial actions and will advise the municipality/owner to submit any required additional **Special** samples needed to assess the possibility of rescinding the EBWO or PDWA (see Section 6.0 Rescinding a PDWA or EBWO); and
 - advise the local SHA Public Health office regarding client's progress and to discuss if the EBWO or the PDWA can be rescinded.

4.5 Special Bacteriological Samples

4.5.1 Special Samples – Positive Bacteriological Results

The following actions are necessary when a Special sample has a positive bacteriological result:

- WSA Business Systems Unit will notify the EPO by telephone and by e-mail: On weekends and after hours, Laboratories will notify the appropriate MHO and On-Call WSA EPO (306-787-9700). If the facility is an MOE regulated facility, the WSA On-Call EPO calls the MOE Spill Control Centre to relay the information to the Provincial Hazardous Materials Coordinator (PHMC) (800-667-7525);
- EPO will contact the client to provide advice and request information as outlined in the positive Special samples follow-up procedures: (See Appendix C);
- EPO will conduct review/assessment of the remedial actions that the community has taken to reduce the immediate threats of waterborne pathogens and assess the validity of the Special samples submitted;
- the PHIs and MHO of the local SHA Public Health office will look for evidence of abnormal number of illnesses that could be related to drinking water;
- EPO will conduct an inspection if no inspection had been conducted earlier;
- EPO and local SHA Public Health office will determine if a PDWA/EBWO is required based on information gathered in the previous points; and
- other follow-up actions are specified below as well as in Article 4.5.2 to 4.5.4.

4.5.2 Special Samples – Positive TC or Overgrowths or >200 Background Bacteria

- WSA EBSU and EPO will follow up as per 4.1;
- EPO will contact the local SHA Public Health office to discuss the results of the information obtained from the positive special sample follow-up procedures, the results of any recent inspections and determine if a PDWA should be issued, if a PDWA has not been issued during the follow-up of the repeat sample;
- in the event that a PDWA is issued to a WSA regulated facility the EPO will advise WSA CCS;
- in the event that a PDWA is issued, the EPO will contact the client to discuss required actions associated with the PDWA which include:
 - conducting additional remedial work;
 - the collection of further **Special** samples (minimum of two (2) sets of three (3) bacteriological samples and to conduct more tests such as turbidity and chlorine residuals on samples from the distribution system) (see Section 6.0 Rescinding a PDWA or EBWO);
 - keeping the residents and the EPO advised of the client's progress on the remedial actions.
- the EPO will keep the local SHA Public Health office apprised of the client's progress on the remedial actions and additional sample follow up.

4.5.3 Special Samples – Positive *E. coli*

- If an EBWO had not been issued at an earlier stage, the MHO of the SHA will issue an EBWO in consultation with the EPO;
- the EPO will discuss the results of the information obtained from the positive Special sample follow-up procedure with the SHA, the results of any recent inspections and determine if an EBWO will be issued for the whole community or just for the specific area (e.g. building) at which the Regular and the Repeat samples were taken;
- if the test results indicate that *E. coli* was only detected at the original positive Regular or Repeat sample location, then an EBWO should only be issued for this location. The following actions will be taken:
 - The EPO will review test results and the municipality/owner's remedial actions and contact the local SHA Public Health office to discuss the possibilities of rescinding the community-wide EBWO, if such an EBWO was already issued;
 - where they have authority, the local SHA Public Health office will investigate the plumbing at that location for possible sources of contamination such as cross connections;
 - additional bacteriological testing within the building/facility, under direction of SHA, will be conducted to try to pin point the cause of the positive samples.
- if the test results show that *E. coli* were found at more than one sample location, then the following actions will be taken:
 - The MHO of the SHA, in consultation with the EPO, will issue a community-wide EBWO;
 - in the event that an EBWO is issued the MHO and/or the local SHA Public Health office will contact the municipality/owner to discuss the required actions associated with the EBWO;

- SHA to advise Saskatchewan Ministry of Health and if a WSA regulated facility EPO to advise WSA CCS;
- where they have authority and when there is reason to believe that the source of the contamination is caused by a plumbing system, the local SHA Public Health office will investigate;
- if an EBWO has been issued, the EPO will advise the client of additional **Special** samples required in follow up to the positive E.coli (see Section 6.0 Rescinding a PDWA or EBWO);
- the subsequent test results and the client's remedial actions will be monitored by the EPO; and
- the EPO will keep the local SHA Public Health office apprised of the client's progress on the remedial actions and sample follow up.

4.5.4. Special Samples – Negative TC, E.coli, No OG, <200 Background Bacteria

- WSA EBSU staff will notify the EPO by e-mail;
- no more samples are required unless an EBWO or a PDWA has been issued;
- if an EBWO or a PDWA has been issued, then the EPO will:
 - Continue to monitor the test results and the client's remedial actions and will advise the client to submit any additional samples needed to assess the possibility of rescinding the EBWO or PDWA (see Section 6.0 Rescinding a PDWA or EBWO); and
 - advise the local SHA Public Health office regarding the client's progress and to discuss if the EBWO or the PDWA can be rescinded.
- if an EBWO and/or PDWA was not issued or they have been rescinded, then the case is closed and no further follow-up is required.

4.6 Other Bacteriological Samples

4.6.1 Other Sample – Positive Bacteriological Results

The following actions are necessary when an "other" sample has a positive bacteriological result:

- WSA EBSU will notify the responsible EPO by phone and by e-mail: On weekends and after hours, Laboratories will notify the appropriate MHO and On-Call WSA EPO (306-787-9700). If the facility is an MOE regulated facility, the WSA On-Call EPO calls the MOE Spill Control Centre to relay the information to the Provincial Hazardous Materials Coordinator (PHMC) (800-667-7525);
- EPO will contact client to request information as outlined in the positive Other sample follow-up procedures and provide technical advice and direction for remedial actions: (See Appendix C);
- EPO will review/assess the situation based on history and discussions with the client;
- the PHIs and MHO of the local SHA Public Health office will look for evidence of abnormal number of illnesses that could be related to drinking water;
- EPO will determine if an inspection is required based on information gathered in the previous points;
- EPO will determine if a PDWA/EBWO is required based on information gathered in the previous points and;
- other follow-up actions are specified below in Article 4.6.2 to 4.6.4.

4.6.2 Other Samples – Positive TC, OG or >200 Background Bacteria

- WSA EBSU and EPO will follow up as per 4.6.1;
- EPO will review the results of the information obtained from the positive Other sample follow-up procedures, the results of any recent inspections and determine if a PDWA should be issued;
- EPO will notify the local SHA Public Health office if a PDWA is issued;
- in the event that a PDWA is issued to a WSA regulated facility the EPO will advise WSA CCS;
- in the event that a PDWA is issued, the EPO will contact the client to discuss required actions associated with the PDWA;
- if a PDWA has not been issued, the EPO will advise the client of the **Other** sample(s) required in follow up to the positive sample;
- if a PDWA has been issued, the EPO will advise the client of the two sets of **Other** samples required in follow up to the positive sample: (see Section 6.0 Rescinding a PDWA or EBWO);
- the EPO will request that the client keep them apprised on the progress on the remedial actions;
- the subsequent test results and the client's remedial actions will be monitored by the EPO; and
- the EPO will keep the local SHA Public Health office apprised of the client's progress on the remedial actions and sample follow up.

4.6.3 Other Samples – Positive *E.coli*

- The EPO will contact the local SHA office to discuss the results of the information obtained from the positive Other sample follow-up procedure, the results of any recent inspections and determine if an EBWO should be issued;
- the MHO of the SHA, in consultation with the EPO, will issue an EBWO if required;
- in the event that an EBWO is issued the MHO and/or the local SHA office will contact the client to discuss the required actions associated with the EBWO;
- in the event that an EBWO is issued to a WSA regulated facility, the EPO will advise WSA CCS and SHA will advise Saskatchewan Ministry of Health;
- If an EBWO has not been issued, the EPO will advise the client of the set of **Other** samples required in follow up to the positive *E.coli*;
- If an EBWO has been issued, the EPO will advise the client of the two sets of **Other** samples required in follow up to the positive *E.coli*: (see Section 6.0 Rescinding a PDWA or EBWO);
- the EPO will request that the client keep them apprised on the progress on the remedial actions;
- the subsequent test results and the client's remedial actions will be monitored by the EPO; and
- the EPO will keep the local SHA Public Health office apprised of the municipality/owner's progress on the remedial actions and sample follow up.

4.6.4 Other Sample – Negative TC, *E.coli*, No OG and <200 Background Bacteria

- WSA EBSU staff will notify the EPO via e-mail;
- The EPO will continue to monitor any additional test results and the client's remedial actions and will advise the client to submit any additional samples as needed;
- if an EBWO or a PDWA has been issued, then the EPO will:
 - Continue to monitor the test results and the client's remedial actions and will advise the client to submit any additional samples needed to assess the possibility of rescinding the EBWO or PDWA (see Section 6.0 Rescinding a PDWA or EBWO) and,
 - advise the local SHA Public Health office regarding the client's progress and to discuss if the EBWO or the PDWA can be rescinded.
- if no additional samples are required then the case is closed and no further follow-up is required.

5.0 Upset Conditions That Result In PDWA's

Upset conditions are abnormal operating conditions or interruptions at the raw water supply, the water treatment facility, or within the water distribution system that could adversely affect the water quality received by the consumer. The WSA and MOE have produced EPB 267 – Upset Reporting at Waterworks/Sewage Works to help clients understand what conditions/events need to be reported. This document can be found on www.saskh2o.ca. When an EPO receives information from a client regarding an upset condition, he/she will assess each situation based on a number of factors. Things the EPO must take into account include source water quality, effectiveness of the treatment system, training/knowledge of the operator, current water quality being produced, risks of contamination, and other applicable standards. If the EPO determines there is a risk of adverse water quality being distributed to users the EPO may opt to issue a PDWA to the affected client; or if localized, the affected area. The most common PDWAs issued are for water main repairs or breaks where sanitation of the repair cannot be guaranteed; however, an advisory may be issued for any of the following reasons. Although all of these events pose a risk to consumers, these events are generally categorized below in a descending order of acute risk.

- acts of vandalism, terrorism, or intentional contamination;
- microbial contamination within the distribution system;
- chemical contamination of the water;
- protozoan or invertebrate contamination;
- lack of adequate treatment component(s) or equipment malfunctions in the treatment plant or disinfection system;
- the bacteriological monitoring results show persistent total coliforms and overgrowths;

- persistently low chlorine/disinfectant residuals (i.e., < 0.5 mg/L of total chlorine residual and <0.1 mg/L of free chlorine residual) in the distribution system;
- significant deterioration in source water quality (i.e., high turbidity due to runoff and other events);
- de-pressurization of a portion or all of the distribution system;
- the human consumptive portion of a hygienic use system shows the presence of bacterial contamination;
- waterworks start-up;
- violations of monitoring, reporting or Permit to Operate a Waterworks conditions; and,
- commissioning of new works or components of waterworks;
- lack of Certified Operator.

5.1 Self Managed Drinking Water Advisories

Many of the larger communities in the province deal with upset conditions on a daily basis in the form of water main repairs or planned/scheduled replacement and maintenance of infrastructure components within distribution systems. In most cases these events are routine for public works/contractor staff and defined Standard Operating Procedures (SOPs) and communication protocols are in place for the processes involved to ensure the repair is conducted correctly, to notify residents when warranted, and ensure activities are completed in a manner to minimize impact to water quality and safety. With the approval of the WSA, some clients may issue their own localized drinking water advisories (DWA) when conducting these repairs; however, notification to the WSA is still required. The WSA is obligated to ensure that the local SHA Public Health office is copied/notified of these DWAs in a timely manner. The WSA has produced WSA 508 – Permittee Guidelines for Self-Managed Waterworks Upsets, Drinking Water Advisories and Consumer Notification. This document can be found on www.saskh2o.ca.

5.2 Waterworks Start Up

New waterworks or waterworks components, modified/upgraded waterworks or seasonally operated waterworks are also at risk of producing adverse water quality if disinfection, flushing and cleaning procedures have not been effective. Typically, these waterworks are placed under PDWA by the EPO until the water they are distributing is proven bacteriologically safe. The WSA has produced EPB 560A - Waterwork Start-up Standard to help clients understand the process and requirements of starting up and commissioning these works. This document can be found on www.saskh2o.ca.

5.3 Contamination Not Remedied By Boiling

In some cases, the water quality concerns as a result of an upset conditions experienced at a waterworks may not be remedied by boiling the water as per a typical PDWA or EBWO. Examples of such can include, chemical contamination, water treatment chemical overfeed¹, vandalism or terrorism where contamination of treated water is suspected. In these cases, it would be prudent for an EPO to issue a PDWA that specifically advises to either “Do Not Drink” or “Do Not Use” the water depending on the circumstances. These types of incidents could impact both human consumptive and hygienic water systems. To ensure consumers are provided with a clear message in the event of known or possible chemical contamination of a human consumptive or a hygienic water supply, PDWAs will be issued with a clarifying statement. The clarifier will be in the form of a “Do Not Drink Notice” or a “Do Not Use Notice.” It is critical that all consumers understand the type of advisory, order or notice that has been issued and follow directions. A **Do Not Drink Notice** will be issued by an EPO when the water for human consumptive use contains, or possibly contains, a chemical contaminant that cannot be removed by boiling and is not harmful if inhaled or contacted. In this case, bottled water or potable water from another known safe quality source should be used for drinking or cooking. A **Do Not Use Notice** will be issued by an EPO if there is a contaminant, or the possibility of a

¹ Unites States Environmental Protection Agency National Primary Drinking Water Regulations lists a Maximum Residual Disinfectant level of Chlorine as Cl₂ as 4.0 mg/l, and Chlorine Dioxide as ClO₂ as 0.8 mg/l. Health Canada’s Guidelines for Canadian Drinking Water Quality lists a Maximum Acceptable Concentration for Chloramines as Cl₂ as 3.0 mg/l. – Concentrations observed above these levels may act as irritants to consumers and users.

Potassium Permanganate (KMnO₄) overfeeds can result in pink water being distributed that may stain laundry and plumbing fixtures, and may act as irritants to consumers and users.

contaminant, in the water that may be inhaled or otherwise harmful on contact. In this case, bottled water or potable water from another known safe quality source should be used for drinking, cooking and washing. In all cases where a PDWA **Do Not Drink Notice** or a **Do Not Use Notice** will be issued by WSA, consultation by the EPO with SHA shall occur as it would be appropriate for SHA to speak to the human health issues surrounding the contamination event. See Appendix F for templates for these types of notices.

5.4 Service Connections

Water distribution systems on large properties or premises servicing institutions, complexes or industries may experience conditions such as water main breaks, depressurizations, maintenance activities, or system upgrades that potentially could adversely affect water quality. Examples of such could include, condominium complexes, trailer courts, shopping malls, box store properties, university/college campuses, hospital grounds, prison complexes and industrial complexes. If these systems are service connections, meaning they receive treated water from a WSA regulated waterworks and are within the municipal boundaries of the client, they themselves would not be subject to EMPA, 2010 or WWSWR. If a hazard was recognized with the upset condition, the property owner could be provided guidance from either WSA or SHA as to how to remedy the problem and confirm the safety of the water supply.

5.5 Planned Upset Events

Clients often deal with infrastructure upgrades or planned/scheduled maintenance or repair projects that can result in the potential for adverse water quality. Events such as planned water main relays, pipe replacements, hydrant or valve repairs, or reservoir cleanings are example of such events. Clients must provide acceptable and timely notice to the public for these events so that WSA and SHA can ensure that adequate plans can be made by residents and SHA regulated facilities to address the conditions of a PDWA. This would allow health care facilities, restaurants, schools, daycares, or other public facilities affected by the proposed PDWA time to prepare. If unreasonable notice is given by the client (< 24 hours), EPOs can consult with PHI's to delay the issuance of the PDWA, and ultimately delay the planned/scheduled project.

5.6 Notifications to SHA of PDWAs due to Upset Conditions

In the event that an EPO determines that the issuance of a PDWA is necessary to protect consumers from adverse water quality, the EPO will try to determine with the aid of the client, if hospitals, health care facilities, restaurants, schools, daycares, or other public facilities will be impacted.

During normal business hours, Monday to Friday (8:00 a.m. - 5:00 p.m.) if hospitals, health care facilities, restaurants, schools, daycares, or other public facilities are impacted, the EPO will contact the local SHA Public Health office to discuss the upset conditions and issuance of a PDWA. The EPO will immediately e-mail a copy of all PDWA correspondence issued to the client to the local SHA Public Health office and to the WSA CCS.

If after normal business hours (5:00 p.m. – 8:00 a.m.) or on weekends and on holidays, if the issuance of a PDWA will impact a hospital, the EPO will immediately contact the MHO On-call via telephone to relay the information of the impacted client and facility. The EPO will immediately e-mail a copy of all PDWA correspondence issued to the client, to the local SHA Public Health office, the MHO On-Call and to the WSA CCS.

If after normal business hours or on weekends and holidays, if health care facilities (other than hospitals), restaurants, schools, daycares, or other public facilities are impacted, the EPO will contact the MHO On-Call via telephone during daytime hours (8:00 a.m. to 5:00 p.m.) to relay the information of the impacted client and facility. The EPO will immediately e-mail a copy of all PDWA correspondence issued to the client, to the local SHA Public Health office, the MHO On-Call and to the WSA CCS.

Should the PDWA not be affecting any hospitals, health care facilities, restaurants, schools, daycares, or other public facilities, the EPO, need only ensure that the local SHA Public Health office of SHA and the WSA CCS is copied on the PDWA e-mail correspondence to the client. On weekends and holidays the MHO On-Call will also be immediately copied on all PDWA correspondence issued to the client.

Should the PDWA require the issuance of a **Do Not Drink Notice** or a **Do Not Use Notice** the EPO will contact the local SHA Public Health office to discuss or if after hours immediately contact the MHO On-call

via telephone to relay the information of the impacted client. The EPO will immediately e-mail a copy of all PDWA correspondence issued to the client, to the local SHA Public Health office, the MHO On-Call and to the WSA CCS.

5.7 Upset Condition – Action Summary

The following actions are necessary when an EPO receives a report of an Upset Condition that may warrant the issuance of a PDWA:

- Client will advise EPO of upset conditions at waterworks;
- EPO will determine with clients help, whether hospitals, health care facilities, restaurants, schools, daycares, or other public facilities are impacted;
- EPO, will determine if the conditions warrant the issuance of a PDWA, including whether a “Do Not Use” or “Do Not Consume” clarifier is required;
- during normal business hours (8:00 a.m. to 5:00 p.m.), if hospitals, health care facilities, restaurants, schools, daycares, or other public facilities are impacted, or a “Do Not Use” or “Do Not Consume” advisory needs to be issued, the EPO will contact the local SHA Public Health office to discuss the upset conditions and issuance of a PDWA. The EPO will immediately send a copy of the PDWA to the client, the local SHA Public Health office and to the WSA CCS via e-mail;
- if after normal business hours (5:00 p.m. to 8:00 a.m.) or on weekends and on holidays, if the issuance of a PDWA will impact a hospital or a “Do Not Use” or “Do Not Consume” advisory needs to be issued, the EPO will immediately contact the MHO On-call via telephone to relay the information of the impacted client and facility. The EPO will immediately send a copy of the PDWA to the client, the local SHA Public Health office, the MHO On-Call and to the WSA CCS via e-mail;
- if after normal business hours (5:00 p.m. to 8:00 a.m.) or on weekends and holidays, if restaurants, schools, daycares, or other health care facilities and public facilities are impacted, but not a hospital, the EPO will contact the MHO On-Call via telephone during daytime hours (8:00 a.m. to 5:00 p.m.) to relay the information of the impacted client and facility. The EPO will immediately send a copy of the PDWA to the client, the local SHA Public Health office, the MHO On-Call and to the WSA CCS via e-mail;
- if no health care facilities, restaurants, schools, daycares, or other public facilities are impacted, the EPO will send a copy of the PDWA to the client, the local SHA Public Health office, the MHO On-Call (if after hours or on weekends) and to the WSA CCS via e-mail;
- in the event that a PDWA is issued, the EPO will contact the client to discuss required actions associated with the PDWA;
- if a PDWA has not been issued, the EPO will advise the client of the **Other** sample(s) required in follow up to the positive sample, or any additional sampling requirements;
- if a PDWA has been issued for suspected bacteriological contamination, the EPO will advise the client of the two sets of **Other** sample(s) required in follow up to the upset condition: (see Section 6.0 Rescinding a PDWA or EBWO);
- if a PDWA has been issued for suspected chemical contamination, and a “Do Not Drink” or “Do Not Use” advisory has been issued, EPO will advise the client of additional water quality testing required to determine the water is safe;
- the EPO will request that the client keep them apprised on the progress on the remedial actions;
- the subsequent test results and the client’s remedial actions will be monitored by the EPO; and
- if the EPO is satisfied with the client’s remedial actions and the subsequent water samples, the PDWA may be rescinded with notification to the local SHA Public Health office.

6.0 Rescinding a PDWA or EBWO

EBWOs or PDWAs are usually rescinded as soon as the microbiological or chemical quality, turbidity, and disinfection residual of the treated water have returned to acceptable levels and/or when the treatment or distribution malfunction has been corrected and sufficient water displaced with water of confirmed acceptable quality has occurred in the distribution system to eliminate any remaining contaminated water. If rescinding a PDWA or EBWO as a result of bacteriological contamination identified through positive Regular, Repeat or Special bacteriological samples, the follow-up bacteriological samples will consist of at **least two consecutive sets of Special samples that have been collected from the water distribution system and analyzed and found to be free of TC, E.coli., OG and have <200 background bacteria colonies.** If rescinding a PDWA or EBWO as a result of an “Upset Condition”, the follow-up bacteriological samples will

consist of at **least two consecutive sets of Other samples that have been collected from the water distribution system and analyzed and found to be free of TC, E.coli., OG and have <200 background bacteria colonies.** Each set of samples should consist of three (3) separate samples, collected in the same day, from three different representative locations in the distribution system. The two sets of samples should be collected a minimum of 24 hours apart. In some cases a reduced number of bacteriological samples and reduced time between sets may be justified for smaller localized PDWAs as is outlined in AWWA's C651-14 – Disinfecting Water Mains. In some cases for a community wide PDWA, more than three (3) bacteriological samples per set may be justified for cities and wide spread water distribution systems. For instance, if clients are normally required to collect more than three (3) “Regular” bacteriological samples on a weekly basis, then the number of bacteriological samples per set should be at least equal to the number of bacteriological samples required by “Regular” sampling.

If rescinding a PDWA with the clarifier “Do Not Drink” or “Do Not Use” the cause of the PDWA must be sufficiently remedied, the chemical contaminant of concern must be confirmed to be within acceptable drinking water quality standards, and the bacteriological safety of the water confirmed. The follow-up bacteriological samples will consist of at **least two consecutive sets of Other samples that have been collected from the water distribution system and analyzed and found to be free of TC, E.coli., OG and have <200 background bacteria colonies.** Each set of samples should consist of 3 separate samples, collected in the same day, from three different representative locations in the distribution system. The two sets of samples should be collected a minimum of 24 hours apart.

An EPO through consultation with the local SHA Public Health Office may require enhanced monitoring requirements (e.g. increased chlorine residual testing/reporting, turbidity monitoring and bacteriological sampling) to be carried out by the municipality/owner until confidence in the operation of the water system is re-established.

In the case of a disease or illness outbreak, EBWOs are usually rescinded after the above conditions have been met and when surveillance indicates that the incidence of the illness in the community has returned to background levels. Owing to lengthy incubation periods for some pathogens and their secondary spread, new cases of illness may occur after the period of contamination has passed. Conversely, a lack of new cases may indicate that the advisory is being followed and not that the causative situation has been rectified.

As EBWOs are issued by the MHO or his/her designate, they must be rescinded by the MHO or their designate. Once WSA and SHA are satisfied that the risk that caused the EBWO has been mitigated, consultation and agreement between the two agencies will result in EBWOs being rescinded by the MHO or his/her designate. Once WSA is satisfied that the risk that caused a PDWA has been mitigated, SHA having not advised WSA of any increased reports of gastrointestinal illness in the impacted area, the PDWA will be rescinded by the EPO, with notification to SHA.

7.0 Media and Public Communication

When a water quality problem occurs in a WSA regulated client’s waterworks the lead spokesperson or agency for the provincial government agencies dealing with the media will initially be WSA CCS with assistance from the local EPO and local SHA Public Health Office for the issuance of PDWAs and EBWOs. MOE, with assistance from the local SHA Public Health Office, will be the lead spokesperson dealing with media when a water quality problem occurs at an MOE regulated waterworks. Questions regarding the technical aspects of the situation will be handled by WSA and MOE respectively, while those questions and inquiries surrounding impacts to human health are to be addressed by the SHA. The EPO and the local SHA Public Health office will make arrangements to set up after hours contacts during the incident. The WSA EPO will send the WSA CCS a copy of the PDWA/EBWO and any completed media release templates that have been provided to the client, to aid WSA CCS in dealing with any further media inquiries. All media releases will be dealt with as a joint effort with the lead agency being determined by the type of advisory issued. All EBWO’s and PDWA’s will be posted on the SaskH2O website. Copies of all media releases will be forwarded to WSA and SHA. Media releases for WSA will be handled by WSA CCS.

If an EBWO is issued by the SHA or PDWA is issued by the EPO, the agency responsible for issuance will ensure that the municipality/owner of the supply:

- notifies all consumers of the EBWO or PDWA and the restrictions of usage of the water (notification will consist of advising door to door where reasonable as well as use of the media where required);
- keeps the consumers and the EPO and the SHA advised of the community's progress on the remedial actions; and
- periodically re-notifies the consumers in the event of an extended EBWO/PDWA.

The WSA Environmental Protection Services and Engineering and Approvals Units will be available to assist the EPOs and SHAs to quickly respond to any drinking water related incident that has had or may have had an affect on water quality or public health that cannot be handled at the local level.

If the SHA receives a complaint from an individual that it is connected to a WSA or MOE regulated system, the SHA will advise the EPO and work jointly on follow-up.

In order to keep the SaskH2O website current, WSA will be kept apprised of all EBWOs and PDWAs that have been issued or rescinded.

During normal business hours (8:00 a.m. – 5:00 p.m.) the laboratories will immediately call MHO's at the SHA and WSA EBSU to notify of any positive *E. coli* sample. After normal business hours (5:00 p.m. – 8:00 a.m.) and on weekends and holidays the laboratories will immediately call the MHOs On-Call (list provided by Saskatchewan Ministry of Health) and the On-Call WSA EPO (1-306-787-9700) to notify of any positive *E. coli* test results. After normal business hours (5:00 p.m. – 8:00 a.m.) and on weekends and holidays if samples results are only positive for the presence of TC, OG, >200 Background bacteria colonies, the laboratory need only contact the On-Call WSA EPO (1-306-787-9700) to advise of the positive test results. The On-Call EPO will attempt to follow up with clients and MHOs On-call (if needed). If the facility is an MOE regulated facility, the WSA On-Call EPO calls the MOE Spill Control Centre to relay the information to the Provincial Hazardous Materials Coordinator (PHMC) (800-667-7525); If required the SHA or the laboratories can contact EPO's directly using the information provided in Appendix I. Failing this inquiries/contact can be handled by contacting the Upset Report Line. (1-844-536-9494).

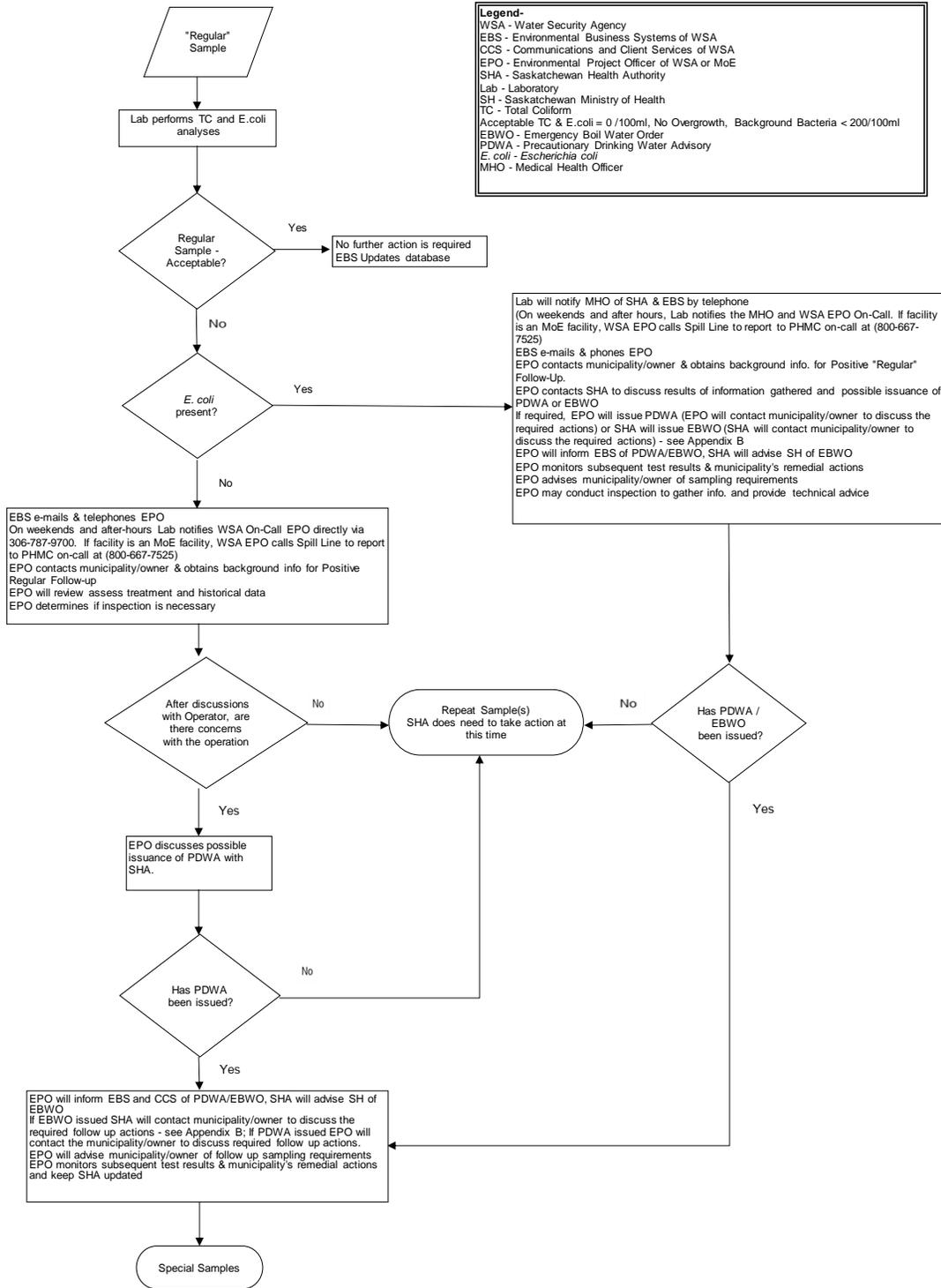
Should a situation arise where the EPO and the SHA are unable to agree on the follow-up of a bacteriological problem, WSA and the Saskatchewan Ministry of Health will intervene. A final decision will be made by the two agencies.

Appendix A

**Process Flow of Actions to be taken by
The Water Security Agency,
The Ministry of Environment,
Saskatchewan Health Authority,
The Ministry of Health, and
Analytical Laboratories**

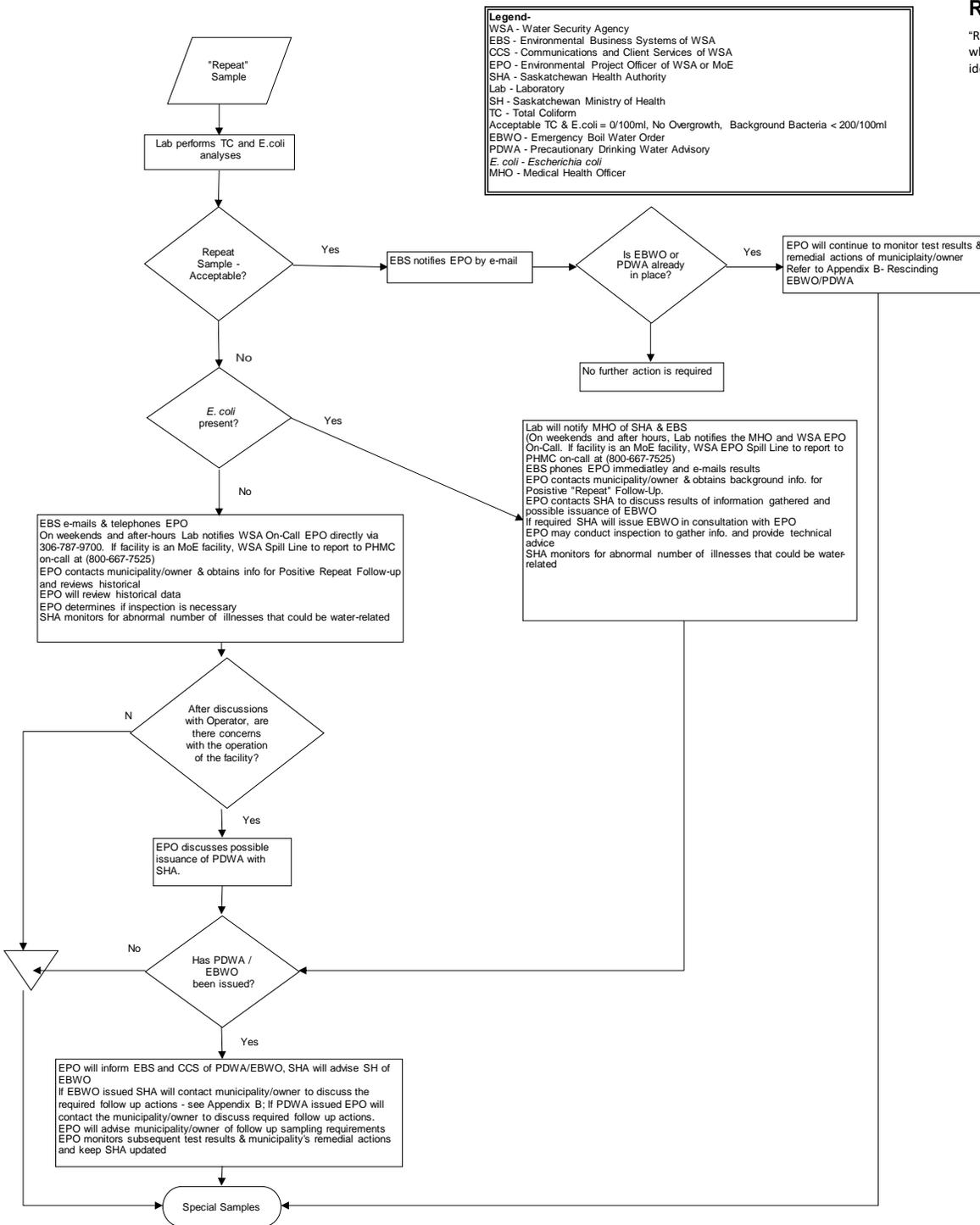
Regular Samples

"Regular" samples mean the water samples taken in a waterworks system to fulfill the sampling requirement as stated in the Permit to Operate issued to the system owner or municipality.



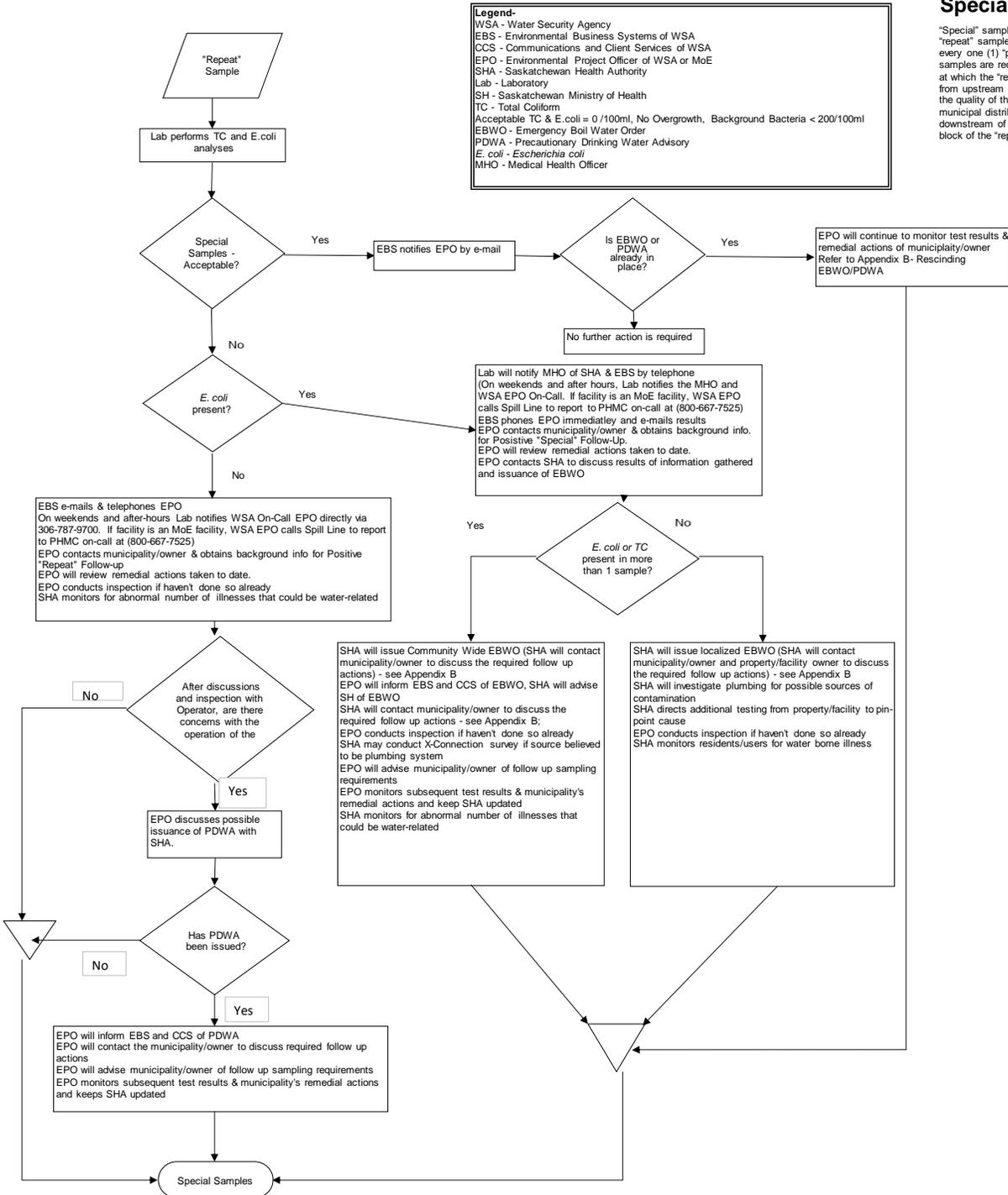
Repeat Samples

"Repeat" samples mean the water samples taken when the "regular" samples have been identified/tested "positive".



Special Samples

"Special" samples mean water samples taken when the "repeat" samples have been identified/ tested "positive". For every one (1) "positive" repeat sample, three (3) "special" samples are required, one (1) taken from the same location at which the "repeat" samples was collected; one (1) taken from upstream of the "repeat" sample which will represent the quality of the water being supplied to that area of the municipal distribution system; and one (1) taken from downstream of the "repeat" sample and within the same block of the "repeat" sampling point.

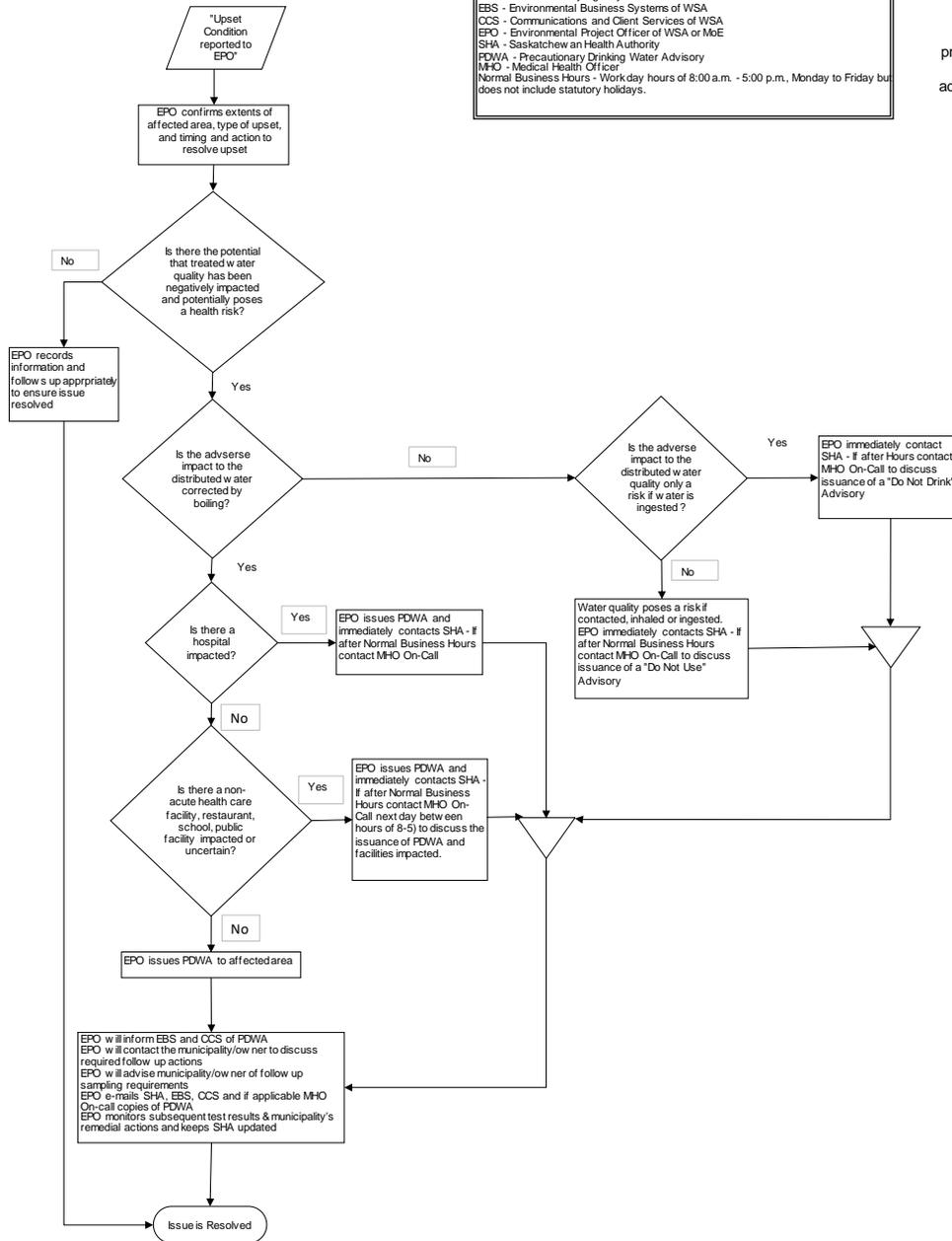


Decision Tree - Upset Condition Process Flow

Legend-
 WSA - Water Security Agency
 EBS - Environmental Business Systems of WSA
 CCS - Communications and Client Services of WSA
 EPO - Environmental Project Officer of WSA or MoE
 SHA - Saskatchewan Health Authority
 PDWA - Precautionary Drinking Water Advisory
 MHO - Medical Health Officer
 Normal Business Hours - Workday hours of 8:00 a.m. - 5:00 p.m., Monday to Friday but does not include statutory holidays.

Upset Condition

Upset Condition is any abnormal conditions, anomalies, or interruptions in the treatment process or distribution system within a waterworks that may have any adverse effect on the quality of water supplied to consumers.



Appendix B

Sampling Procedure for Bacteriological Quality

1. Locate a sample collection location that is:
 - Not a faucet connected to a point of use/point of entry water treatment device;
 - Not a hose or a faucet located outside of the building.
 - Not a mixing tap or a tap with a pull out/pull down extendable faucet
2. Ensure the sterile bottle supplied by the lab is sealed and the seal is not broken.
3. Ensure that there is no strainer/aerator on the faucet.
4. Wash hands carefully with soap and water.
5. Disinfect the end of the faucet.
6. Leave the water running for two (2) to three (3) minutes.
7. Perform free and total chlorine residual tests and turbidity and record the results on the form which is to be submitted with the sample.
8. Reduce the flow to a steady stream.
9. Take the cap off the bottle and hold it in one hand and the bottle in the other. Do not rinse the bottle. Use a new bottle, if you do.
10. Do not lay the cap down or drop it. Do not touch the inside of the cap or the mouth of the bottle. Use a new bottle, if you do.
11. Carefully fill the bottle until the water is within 6 - 7 mm from the top.
12. Put the cap back on the bottle such that the inside of the cap or the mouth of the bottle are untouched. Write the community name on the space provided on the sample bottle.
13. Fill in the sample form and **immediately** send it and the water bottle to the accredited laboratory in the supplied container. A sample collected on Thursday, Friday, or Saturday should be sent by courier, since it may not get to the laboratory by Saturday. All samples must be kept cool during shipping by means of a small cooler and reusable ice pack. **A sample older than two (2) days will not be tested for bacteria unless provided a 72 hour exemption in exceptional circumstances. Samples incorrectly dated in the future or incorrectly dated for previous months or years will be flagged as questionable.**

NOTE: The Environment Project Officer (EPO) will assist the client with establishing approved locations for the collection of the bacteriological samples as required in the Permit to Operate a Waterworks.

Appendix C

Positive Bacteriological Follow-up Procedures

Positive Regular Sample Follow-up Guidelines

Date: _____

Municipality/Owner: _____

Person Contacted/Position: _____

Location of Sample: _____

Sample Result:

- total chlorine: _____
- free chlorine: _____
- turbidity: _____

Who collected the sample: _____

What is the exact sampling location (type of faucet)? _____

Was there a point of use treatment device or water softener on-line? _____

How long did the water run prior to collecting the sample? _____

Was the screen/aerator/rubber gasket removed? _____

Is there any leakage from internal parts? _____

Was the bottle seal removed prior to opening the bottle? _____

Was the inside of the cap or neck of the bottle touched? _____

Was the bottle filled and capped without rinsing? _____

Was the sample promptly mailed to the accredited laboratory? _____

Water Treatment Plant:

- chlorine dosage rate: _____
- total chlorine: _____
- free chlorine: _____
- turbidity: _____

Have there been any problems with your waterworks (source, treatment plant, distribution system)?

Saskatchewan Health Authority

Contact: _____

Discussion with SHA:

For Environment Project Officer Use Only

Advise the community to check the “Repeat” sample box on the bacteriological form.

Advise community that a “Repeat” sample collected on Thursday, Friday or Saturday should be sent by courier instead of regular mail, since it may not get to the accredited laboratory by Saturday. **A sample older than two (2) days will not be tested for bacteria.**

Date “Repeat” sample was requested to be taken on: _____

Comments:

Environmental Project Officer’s Initials: _____

Positive Repeat Sample Follow-up Guidelines

Date: _____

Municipality/Owner: _____

Person Contacted/Position: _____

Location of Sample: _____

Sample Result:

- total chlorine: _____
- free chlorine: _____
- turbidity: _____

Were there any problems in collecting the sample? _____

Water Treatment Plant:

- chlorine dosage rate: _____
- total chlorine residual: _____
- free chlorine residual: _____
- turbidity: _____

Is the potable water being continuously chlorinated? _____

Have there been any interruptions in the chlorination process since the taking of the sample?

Have there been any interruptions in the treatment process? _____

Have there been any interruptions in the distribution system? _____

When was the system last flushed and was anything unusual noticed at that time? _____

Has the system been depressurized lately? _____

Location and type of recent repair _____

Were mains sanitized at the time of repair? _____

Were all valves checked for operation? _____

Is there a possibility of cross-connections? _____

Has there been any new construction on the system? _____

Have there been any consumer complaints? _____

Saskatchewan Health Authority Contact: _____

Discussion with SHA:

For Environment Project Officer Use Only

Advise the community to do the following remedial work prior to collection of the special samples.

Advise the community to collect three special samples and check the "Special" box on the bacteriological form.

Advise community that "Special" samples collected on Thursday, Friday, or Saturday should be sent by courier instead of regular mail, since they may not get to the accredited laboratory by Saturday, **samples older than two (2) days will not be tested for bacteria.**

Location of Repeat Samples: _____

Date "Repeat" samples were requested to be taken on: _____

Comments: _____

Environmental Project Officer's Initials: _____

Positive Special Samples Follow-up Guidelines

Date: _____

Municipality/Owner: _____

Location	Result	Total Chlorine	Free Chlorine	Turbidity ³

Remedial work done by the Community prior to the “special” samples being collected: _____

Environmental Project Officer’s Inspection

Date: _____

Persons in community interviewed: _____

Observations: _____

Recommendations made to the community: _____

WSA Contact: _____

Discussion with Management: _____

Saskatchewan Health Authority Contact: _____

Discussion with SHA: _____

Person in Community Contacted: _____

Follow-up Requested: _____

³ Turbidity measurements are only conducted on-site for human consumptive waterworks.

Location of "Special" samples: _____

Date "Special" samples were requested to be taken: _____

For Environment Project Officer Use Only

Advise the community to do the following remedial work prior to collection of the special samples.

Advise the community to collect three special samples and check the "Special" box on the bacteriological form.

Advise community that "Special" sample collected on Thursday, Friday or Saturday should be sent by courier instead of regular mail, since it may not get to the accredited laboratory by Saturday. **A sample older than two (2) days will not be tested for bacteria.**

Comments: _____

Environmental Project Officer's Initials: _____

Positive Other Sample Follow-up Guidelines

Date: _____

Municipality/Owner: _____

Person Contacted/Position: _____

Location of Sample: _____

Sample Result:

- total chlorine: _____
- free chlorine: _____
- turbidity: _____

Who collected the sample: _____

What is the exact sampling location (type of faucet)? _____

Was there a point of use treatment device or water softener on-line? _____

How long did the water run prior to collecting the sample? _____

Was the screen/aerator/rubber gasket removed? _____

Is there any leakage from internal parts? _____

Was the bottle seal removed prior to opening the bottle? _____

Was the inside of the cap or neck of the bottle touched? _____

Was the bottle filled and capped without rinsing? _____

Was the sample promptly mailed to the accredited laboratory? _____

Water Treatment Plant:

- chlorine dosage rate: _____
- total chlorine: _____
- free chlorine: _____
- turbidity: _____

Was this “other” sample collected as a result of an upset condition, maintenance activity, or commissioning/start-up activity?

Has there been any problems with your waterworks (source, treatment plant, distribution system)?

Saskatchewan Health Authority

Contact: _____

Discussion with SHA (if needed):

For Environment Project Officer Use Only

Advise the community to check the “Other” sample box on the bacteriological form.
Advise community that a sample collected on Thursday, Friday or Saturday should be sent by courier instead of regular mail, since it may not get to the accredited laboratory by Saturday. **A sample older than two (2) days will not be tested for bacteria.**

Date “Other” sample was requested to be taken on: _____

Comments:

Environmental Project Officer’s Initials: _____

Appendix D
Sample Letter for Issuance of PDWAs

Mon/Da/year

Name of Community

Mailing Address

Community SK Postal Code

Dear Waterworks Owner/Operator:

This letter is to advise you that a **Precautionary Drinking Water Advisory (PDWA)** will be issued for *location of PDWA of the Client's Name*'s water distribution system, and is effective *immediately or insert future time and date* until further notice.

Water Security Agency (WSA) protocol, *in consultation with Saskatchewan Health Authority (remove if SHA not consulted)*, is to place water distribution systems under a PDWA when a *type of upset condition* results in a *result/effect to water quality/system*, until such time as the water within the water distribution system is proven safe for human consumptive use. This PDWA remains in effect until the safety of the *Client's Name*'s distributed water can be ensured. Therefore the administration shall notify all affected users of the *affected portion of the* water distribution system of the conditions in the attached PDWA poster.

This PDWA can be rescinded by the WSA once the following is completed: *(Depending on the reason, clauses can be added, modified, or deleted.)*

- 1) The break has been repaired, and all related appurtenances have been disinfected and flushed according to applicable standards.
- 2) The *affected portion of the* water distribution system has been pressurized, and *flushed (if possible)*, according to applicable standards.
- 3) The water treatment plant is producing water that achieves the water quality limits stated in the *Client's Name*'s Permit to Operate a Waterworks.
- 4) The receipt of two consecutive sets of **XXX** (*X* total) bacteriological samples, collected 24 hours apart from representative locations within the area of the water distribution system affected, which are analyzed and found to be negative for bacteriological presence. Samples are to be marked as "Other" and labeled with the appropriate station number in order to expedite their processing. These samples will not count towards sampling compliance.

For further information please do not hesitate to contact the undersigned at (306) **XXX-XXXX** or [*firstname.lastname@wsask.ca*](mailto:firstname.lastname@wsask.ca) .

Sincerely,

WATER SECURITY AGENCY

Issuing EPO

Environmental Project Officer

cc: *Manager*, Water Security Agency

Water Advisories, Water Security Agency

Saskatchewan Health Authority, *Office location*

Appendix E
Sample Letter for Rescindment of PDWAs

Mon/Da/year

Name of Community

Mailing Address

Community SK Postal Code

Dear Waterworks Owner/Operator:

RE: Precautionary Drinking Water Advisory for *Community/Client Name* - Rescinded

The Water Security Agency (WSA) is satisfied with (*rationale for rescindment of Advisory*) negative bacteriological sampling and adequate disinfection residuals and turbidity values from samples that have been collected from the water distribution system following the (*rationale for issuance of Advisory*) recent waterworks system depressurization. Therefore, effective immediately the WSA is rescinding the ““**Precautionary Drinking Water Advisory**” for the residents and users of the *Community/Client's Name* water supply.

For further information please do not hesitate to contact the undersigned at (306) *XXX-XXXX* or [*firstname.lastname@wsask.ca*](mailto:firstname.lastname@wsask.ca) .

Sincerely,

WATER SECURITY AGENCY

Issuing EPO

Environmental Project Officer

cc: *Manager*, Water Security Agency

Water Advisories, Water Security Agency

Saskatchewan Health Authority, *Office location*

Appendix F

Model of a Precautionary Drinking Water Advisory Posters (English/French),



Precautionary Drinking Water Advisory

This Advisory applies to residents and users of Client's Name's water distribution system location of affected area, and is effective *immediately or insert future date at XX:XX a/pm*.

Pursuant to clause 36(1)(a) of *The Environmental Management and Protection Act, 2010* this Precautionary Drinking Water Advisory is issued due to *type of upset cause* resulting in *result/effect to water quality/system* and therefore the safety of the drinking water supply cannot be ensured at all times. Therefore, pursuant to clause 36(1)(b) of *The Environmental Management and Protection Act, 2010*, consumers must be notified to:

- (a) boil all water, used for drinking purposes, for at least one (1) minute, at a rolling boil, prior to use;
- (b) boil water to be used for other activities where it may be ingested, including:
 - (i) brushing teeth or soaking false teeth;
 - (ii) washing fruits and vegetables;
 - (iii) food or drink which will not be subsequently heated; and
 - (iv) ice cubes;
- (c) not use the water for washing dishes, unless the water has been boiled or the dishes are sanitized in another fashion. Washed dishes and utensils can be soaked in a bleach water solution (approximately 2 tablespoons of bleach per gallon or 10 ml of bleach per liter of water) for at least two minutes after being washed to kill any bacteria which may be present.

Note: **Do not mix bleach with soaps or detergents.**

- (d) not drink from any public drinking fountains supplied with water from the public water supply;
- (e) ensure that younger children and infants are sponge bathed;
- (f) use an alternative water source known to be safe, if they do not wish to boil the water; and
- (g) consult with your physician if you have cuts or rashes that are severe before using the water.

Under most circumstances, there is no need to boil water used for other household purposes. Adults, adolescents and older children may shower, bathe or wash using tap water but should avoid swallowing the water. Laundry may be washed in tap water, either by hand or by machine.

This Advisory is effective on the date and time listed above, and will not be lifted until the water supply is determined to be completely safe.

Residents and operators of public facilities may access detailed precautions for PDWAs/EBWOs online at <https://www.saskhealthauthority.ca/Services-Locations/RRPL/Pages/Water-Quality-and-Testing.aspx>

If you require any additional information, please contact the following:

Community Name

Water Security Agency – EMMS Division
Water Security Agency – Communications Manager
Saskatchewan Health Authority, *Office Location*

306 – XXX - XXXX
306 – XXX - XXXX
306 – 694-8914 Media Inquiries
306 – XXX - XXXX

Issuing EPO name – Environmental Project Officer
Water Security Agency



Avis d'ébullition préventif de l'eau

Cet avis s'applique à tous les utilisateurs de ***Client's Name's*** réseau de distribution d'eau, **situé dans (*Streets/addresses affected*)**, et est en vigueur à partir du ***insert effective date at XX:XX a/pm***.

Conformément à clause 36(1)(a) de *The Environmental Management and Protection Act, 2010* cet avis d'ébullition préventif est émis en raison d'un problème survenu dans le réseau de distribution d'eau potable. Par conséquent, la sécurité de l'approvisionnement ne peut être assurée en tout temps. Ainsi, conformément à la clause 36(1)(b) de *The Environmental Management and Protection Act, 2010*, vous êtes priés de prendre les mesures suivantes:

- (a) Faire bouillir à gros bouillons toute eau servant à la consommation pendant au moins une (1) minute avant de la boire.
 - (b) Faire bouillir l'eau qui pourrait par la suite être ingérée, y compris l'eau servant :
 - (i) à se brosser les dents ou à faire tremper des prothèses dentaires;
 - (ii) à laver des fruits et des légumes;
 - (iii) à préparer des aliments ou des breuvages qui ne seront pas réchauffés;
 - (iv) à faire des cubes de glace.
 - (c) Ne pas utiliser l'eau du robinet pour laver la vaisselle à moins de l'avoir fait bouillir auparavant ou de désinfecter la vaisselle et les ustensiles d'une autre façon après le lavage. La vaisselle peut être désinfectée au lave-vaisselle s'il est muni d'un cycle de séchage ou de rinçage sanitaire à température élevée. Si votre lave-vaisselle n'offre pas cette option, vous pourrez faire tremper la vaisselle pendant au moins 2 minutes dans une solution composée de 10 ml d'eau de Javel par litre d'eau (ou 2 c. à soupe de javellisant par gallon d'eau) afin de détruire les bactéries qui pourraient s'y trouver.
- Attention: **Ne mélangez pas le javellisant avec du savon ou du détergent.**
- (d) Éviter de boire l'eau des abreuvoirs approvisionnés par la source publique.
 - (e) Laver les jeunes enfants à la débarbouillette.
 - (f) Utiliser une autre source d'eau potable si vous ne désirez pas faire bouillir l'eau.
 - (g) Consulter votre médecin si vous avez des coupures ou des éruptions cutanées graves avant de vous servir de l'eau.

Dans la plupart des cas, il n'est pas nécessaire de faire bouillir l'eau pour les tâches ménagères. La lessive, par exemple, peut se faire normalement. Les adultes, les adolescents et les enfants plus âgés peuvent prendre un bain ou une douche avec l'eau du robinet mais doivent éviter d'avaler l'eau.

Cet avis d'ébullition est en vigueur à compter de la date ci haut mentionnée et demeurera en vigueur jusqu' à l'avis du contraire.

Pour de plus amples renseignements, communiquez avec les autorités ci-dessous.

Bureau de la Ville <i>Community Name</i>	306 – <i>XXX - XXXX</i>
Water Security Agency – EMMS Division	306 – <i>XXX - XXXX</i>
Water Security Agency – Directeur des communications	306 – 694-8914 pour les
demandes d'information des médias	
Saskatchewan Health Authority, <i>Office Location</i>	306 – <i>XXX - XXXX</i>

Issuing EPO name – Environmental Project Officer
Water Security Agency



Precautionary Drinking Water Advisory (Do Not Drink Notice)

This Advisory applies to residents and users of Client's Name's water distribution system location of affected area, and is effective immediately or insert future date at XX:XX a/pm.

This Do Not Drink Notice is issued due to the water possibly being or is contaminated with an unknown (or state the substance).

An unknown substance (or state the substance) has been/may have been added to the drinking water supplied by the (Name of System) due to a recent (intrusion; break-in) at (one of the wells or surface water reservoirs; treatment plant; treated water reservoir; distribution system). The Water Security Agency and (Name of System) are advising all consumers to NOT USE THE TAP WATER FOR DRINKING AND COOKING UNTIL FURTHER NOTICE.

Consumers should do the following:

Do Not Drink Your Tap Water – Use Only Bottled Water. Bottled water or other source of known good quality water should be used for all drinking (including baby formula and juice), brushing teeth, washing dishes, making ice and food preparation.

Do Not Try and Treat The Water Yourself. Boiling, freezing, filtering, adding chlorine or other disinfectants, or letting the water stand will not make the water safe.

Optional: Potable water is available at the following location (list location)
Bring a clean water container.

This Advisory is effective on the date and time listed above, and will not be lifted until the water supply is determined to be completely safe.

If you require any additional information, please contact the following:

Community Name

Water Security Agency – EMMS Division
Water Security Agency – Communications Manager
Saskatchewan Health Authority, Office Location

306 – XXX - XXXX
306 – XXX - XXXX
306 – 694-8914 Media Inquiries
306 – XXX - XXXX

Issuing EPO name – Environmental Project Officer
Water Security Agency

Precautionary Drinking Water Advisory (Do Not Use Notice)

This Advisory applies to residents and users of Client's Name's water distribution system location of affected area, and is effective immediately or insert future date at XX:XX a/pm.

This Do Not Use Notice is issued due to the water possibly being or is contaminated with an unknown (or state the substance).

An unknown substance (or state the substance) has been/may have been added to the drinking water supplied by the (Name of System) due to a recent (intrusion; break-in) at (one of the wells or surface water reservoirs; treatment plant; treated water reservoir; distribution system). The Water Security Agency and (Name of System) are advising all consumers to NOT USE THE TAP WATER FOR ANY PURPOSES UNTIL FURTHER NOTICE.

Consumers should do the following:

Do Not Use Your Tap Water. The Tap water may be contaminated with an unknown or (state the substance) that is harmful by consumption, skin contact or inhalation (e.g. aerosols generated during showering) routes. Therefore the water should not be used under any circumstances.

Do Not Drink Your Tap Water – Use Only Bottled Water. Bottled water or other source of known good quality water should be used for all drinking (including baby formula and juice), brushing teeth, washing dishes, making ice and food preparation.

Do Not Try and Treat The Water Yourself. Boiling, freezing, filtering, adding chlorine or other disinfectants, or letting the water stand will not make the water safe.

Optional: Potable water is available at the following location (list location)
Bring a clean water container.

This Advisory is effective on the date and time listed above, and will not be lifted until the water supply is determined to be completely safe.

If you require any additional information, please contact the following:

Community Name

Water Security Agency – EMMS Division
Water Security Agency – Communications Manager
Saskatchewan Health Authority, Office Location

306 – XXX - XXXX
306 – XXX - XXXX
306 – 694-8914 Media Inquiries
306 – XXX - XXXX

Issuing EPO name – Environmental Project Officer
Water Security Agency

Appendix G
Emergency Boil Water Order and an Emergency Boil Water Notice

Emergency Boil Water Order

**Order to Remedy a
Health Hazard Associated with Water**

This order given this _____(date) pursuant to Section 25 of *The Public Health Act, 1994*.

To: (Municipality or owner/operator of the water supply)

Whereas you are responsible for the following health hazard:

The **(presence of contaminants or lack of minimum treatment)**, namely **(list)** _____ **(in, for)** the public water supply provided by you to the municipality(ies) of _____.

Pursuant to Section 25 of *The Public Health Act, 1994*, you are hereby ordered to remedy the health hazard by:

1. Take all reasonable steps to immediately notify all users of the public water supply of the (presence of unacceptable bacteria levels or lack of adequate disinfection) and the steps necessary to make the water supply safe, including:
 - (a) boiling all water used for drinking purposes for at least one (1) minute, at a rolling boil, prior to use;
 - (b) advising that such boiled water should be used for other activities where it may be ingested, including:
 - (i) tooth brushing or soaking false teeth;
 - (ii) dishwashing, unless sanitized in another fashion;
 - (iii) food or drink which will not be subsequently heated; and
 - (iv) ice cubes;
 - (c) advising persons providing food or drink to the public to ensure all water that will be consumed by the public is boiled and to make non-operational all public drinking fountains supplied with water from the public water supply.
 - (d) making the attached "Emergency Boil Water Notice" available to users of the public water supply by:
 - (i) posting in conspicuous places in public buildings and areas in the municipality(ies).
 - (ii) (list any other appropriate methods for the circumstance – newspaper, distribute copies. etc.);
 - (e) advising persons not wishing to boil water that they should use an alternative water source known to be safe.
2. This order remains in effect until safe water is restored as evidenced by **[Note to Saskatchewan Health Authority Public Health Regional Office: If applicable, insert the following: The completion of remedial measures e.g. minimum disinfection treatment is restored; disinfection of the well is completed and or distribution pipes are disinfected and flushed; turbidity levels are normal etc.]** and two consecutive tests of samples taken at locations directed by the _____ WSA or MoE

NOTE TO MEDICAL HEALTH OFFICER OR DESIGNATE: This Order should be accompanied by a cover letter, which includes a statement similar to the following: You may appeal this Order in accordance with Section 11 of the *The Public Health Appeals Regulations* (excerpt of the regulations, pages 5-10, attached).

Medical Health Officer or Designate

Appendix H Guidance for using CNPHI for WSA Regulated facilities

Canadian Network for Public Health Intelligence

The CNPHI is a secure web based collection of applications and resources designed to provide an electronic reporting system for Drinking Water Quality Advisories throughout the country. This facilitates timely and standardized notification of local, provincial, and national public health and regulatory officials of these drinking water events and the potential for impacts to public health. The location of the website is www.cnphi-rcrsp.ca and new users of the website will be required to apply for an account.

To create a new drinking water advisory select "Drinking Water Advisories" under the Alerts Tab on the home page. This will access a Dashboard that summarizes active postings throughout the country. The user then can select "Create New Posting" and proceed to enter the details of the event.

The majority of information that is required in order to post the Advisory on the CNPHI website can be filled in by the EPO from the information gathered in discussions with the client and SHA. Information regarding the "Water Quality Reason" or "Operational Reason" for the issuance of the EBWO or PDWA can be selected from a category of types of incidents and events, or categorized as Not Applicable.

A "Priority Level" of the Advisory is required to be identified by the individual entering the details of the event. The four priority levels, "Non-Critical", "Important", "Urgent" and "Emergency" are intended to signify the level of risk to human health associated with the drinking water event that has led to the advisory/order. In order to standardize the categorization of adverse water quality events into the "Priority Levels", the following is offered:

Non-Critical (Green) – System line breaks, depressurizations, water main repairs/replacements, seasonal start-ups, planned maintenance, reservoir cleaning, low chlorine residuals in rural water pipelines

Important (Yellow) – Elevated turbidity through treatment process, suspected unintentional contamination of some form (Do Not Use or Do Not Consume), damaged reservoirs/holding tanks, short term disinfection loss, low levels in municipal distribution systems, no certified operator

Urgent (Orange) – detected Total Coliforms in treated water, loss of chlorination/disinfection systems for a significant period of time such that disinfectant levels in the distribution system are below regulatory values, catastrophic treatment system component failure, cross connections with suspected backflow, inability to adequately treat raw water with high turbidity

Emergency (Red) – EBWO's where E.coli or other pathogen have been detected, waterborne disease outbreaks, suspected intentional contamination (vandalism, terrorism, unauthorized entry) Do Not Drink/Do Not Consume plant, intentional system contamination

Under the "Event Description" the actual specific details of the event can be entered. This consists of a "Title" for the event as well as "Details" section. The Title is limited to 100 characters and therefore should adhere to the following format:

"PDWA or EBWO" - "Client/Community Name" - "(localized)" – *use this text if Advisory only affects a portion of the community* – "affects (indicate area affected)", "effective immediately" (when Advisory goes into effect.)

e.g. "PDWA – Town of Wadena – (localized), affects 200, 300 Blocks of Smith St., Effective Immediately"

In the details section the entire Poster/Order can be copied and pasted to ensure consistent information is listed on the CNPHI website.

Upon return of satisfactory conditions in the waterworks the EPO will rescind the Advisory/Order. A "Reason for Rescindment" must be selected and a section on "Final Details" must be completed. The "Final Details" can consist of the body of the rescindment letter provided to the client.

Appendix I



It's easy to find information about drinking water in Saskatchewan - www.saskh2o.ca

EPB 230A – JANUARY 2019

Water Security Agency - www.wsask.ca

For After Hours Emergency Contact: Please call the 24-hour Upset Report Line at 1-844-536-9494.

<p>Environmental and Municipal Management Services- Regina Facsimile - Regina (306) 787-0780</p> <p>Communications and Client Services – Moose Jaw- Media Inquiries Telephone: 306-694-8914 Facsimile: 306-694-3105 Patrick.Boyle@wsask.ca</p> <p>Communications and Client Services – Regina - Media Inquiries Telephone: 306-787-6170 Facsimile: 306-787-0780 ron.podbielski@wsask.ca</p>	<p>Bacteriological Reporting Environmental Business Systems Supervisor - Shaun Hase Telephone: (306) 787-9138 Cellular: (306) 535-4347 shaun.hase@wsask.ca</p> <p>Environmental Business Systems Analyst – Niyi Farounbi Telephone: (306) 787-6178 niyi.farounbi@wsask.ca</p> <p>Environmental Business Systems Analyst – Shayan Jamil Telephone: (306) 787-1609 shayan.jamil@wsask.ca</p>																																
<p>Environmental Services Section North Manager – Barry Wright Telephone: (306) 953-3374 Cellular: (306) 930-9254 barry.wright@wsask.ca</p> <p>EPO Meadow Lake – Morgan Gutek Telephone: (306) 236-0403 Cellular: (306) 240-4522 morgan.gutek@wsask.ca</p> <p>EPO Nipawin – Ries Mansuy Telephone: (306) 862-1767 Cellular: (306) 921-7395 ries.mansuy@wsask.ca</p> <p>EPO North Battleford (East) – Bruce Dahl Telephone: (306) 933-8387 Cellular: (306) 230-3184 bruce.dahl@wsask.ca</p> <p>EPO North Battleford (West) - Kris Dushire Telephone: (306) 446-7683 Cellular: (306) 441-5774 kris.dushire@wsask.ca</p> <p>EPO Prince Albert (East) – Mahdi Kowsari Telephone: (306) 953-3369 Cellular: (306) 961-8448 mahdi.kowsari@wsask.ca</p> <p>EPO Prince Albert (West) – Kerry Desjarlais Telephone: (306) 953-2296 Cellular: (306) 961-8400 kerry.desjarlais@wsask.ca</p> <p>EPO Saskatoon - Lee Reinhart Telephone: (306) 933-8367 Cellular: (306) 230-3254 lee.reinhart@wsask.ca</p> <p>EPO Watrous - Gary Papic Telephone: (306) 946-3233 Cellular: (306) 946-7774 gary.papic@wsask.ca</p> <p>Facsimile Numbers</p> <table style="width: 100%; border: none;"> <tr><td>Meadow Lake</td><td>(306) 236-0474</td></tr> <tr><td>Nipawin</td><td>(306) 862-1771</td></tr> <tr><td>North Battleford</td><td>(306) 446-7507</td></tr> <tr><td>Prince Albert</td><td>(306) 953-3939</td></tr> <tr><td>Saskatoon</td><td>(306) 933-6820</td></tr> <tr><td>Watrous</td><td>(306) 946-3232</td></tr> </table>	Meadow Lake	(306) 236-0474	Nipawin	(306) 862-1771	North Battleford	(306) 446-7507	Prince Albert	(306) 953-3939	Saskatoon	(306) 933-6820	Watrous	(306) 946-3232	<p>Environmental Services Section South Manager – Greg Holovach Telephone: (306) 694-3586 Cellular: (306) 631-1296 greg.holovach@wsask.ca</p> <p>EPO Melville - Derrick Hoehn Telephone: (306) 728-7492 Cellular: (306) 728-7091 derrick.hoehn@wsask.ca</p> <p>EPO Moose Jaw – Andrew Hickey Telephone: (306) 694-3364 Cellular: (306) 630-3683 andrew.hickey@wsask.ca</p> <p>EPO Moose Mountain – Rod Broadfoot Telephone: (306) 787-4584 Cellular: (306) 529-3265 rod.broadfoot@wsask.ca</p> <p>EPO Regina – Don Turner Telephone: (306) 787-6199 Cellular: (306) 539-4188 don.turner@wsask.ca</p> <p>EPO Strasbourg – Aleena James Telephone: (306) 694-3933 Cellular: (306) 630-8476 aleena.james@wsask.ca</p> <p>EPO Gravelbourg – Lauren Daly Telephone: (306) 694-3939 Cellular: (306) 630-7485 lauren.daly@wsask.ca</p> <p>EPO Kindersley - Rod Lemon Telephone: (306) 778-8642 Cellular: (306) 741-7718 rod.lemon@wsask.ca</p> <p>EPO Shaunavon - Jenna Furseth Telephone: (306) 778-8685 Cellular: (306) 741-9850 jenna.furseth@wsask.ca</p> <p>EPO Yorkton – Rick Sheichuk Telephone: (306) 786-1424 Cellular: (306) 621-2230 rick.sheichuk@wsask.ca</p> <p>Facsimile Numbers</p> <table style="width: 100%; border: none;"> <tr><td>Kindersley</td><td>(306) 778-8271</td><td>Regina</td><td>(306) 787-0780</td></tr> <tr><td>Melville</td><td>(306) 728-7504</td><td>Shaunavon</td><td>(306) 778-8271</td></tr> <tr><td>Moose Jaw</td><td>(306) 694-3212</td><td>Gravelbourg</td><td>(306) 694-3212</td></tr> <tr><td>Moose Mountain</td><td>(306) 787-0780</td><td>Strasbourg</td><td>(306) 694-3212</td></tr> <tr><td></td><td></td><td>Yorkton</td><td>(306) 786-1495</td></tr> </table>	Kindersley	(306) 778-8271	Regina	(306) 787-0780	Melville	(306) 728-7504	Shaunavon	(306) 778-8271	Moose Jaw	(306) 694-3212	Gravelbourg	(306) 694-3212	Moose Mountain	(306) 787-0780	Strasbourg	(306) 694-3212			Yorkton	(306) 786-1495
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		Yorkton	(306) 786-1495																														

Saskatchewan Health Authority: Environmental Health Contacts (June 2019)

Website: The SaskH2O website can be used to determine the health region for a specific community.

<https://www.saskhealthauthority.ca/Services-Locations/Pages/Home.aspx>

<p>Weyburn Office Box 2003 WEYBURN SK S4H 2Z9 PH: 842-8618 // FAX: (306) 842-8637 MHO: Dr. Lanre Medu (306) 842-8659 PHI Supervisor: Kristin Waroma (306) 842-8623</p>	<p>Moose Jaw Office 1000B Albert Street MOOSE JAW SK S6H 2X9 PH: (306) 691-2300 // FAX: (306) 691-2330 MHO: Dr. Lanre Medu & Dr. Hortense Nsoh Tabien (306) 691-2307 Director: Travis Philipation (306) 631-6009</p>
<p>Swift Current Office 350 Cheadle Street West SWIFT CURRENT SK S9H 4G3 PH: (306) 778-5280 // FAX: (306) 778-5408 MHO: Dr. David Torr Cell #(306) 835-7631 Senior PHI: Bradford Giesbrecht (306) 778-5417</p>	<p>Yorkton Office 150 Independent Street YORKTON SK S3N 0S7 PH: (306) 786-0600 // FAX: (306) 786-0620 MHO: Dr. Ashok Chhetri (306) 786-0606 PHI Manager: Jon Gaudry (306) 786-0636</p>
<p>Regina Office 2110 Hamilton Street REGINA SK S4P 2E3 PH: (306) 766-7755 FAX: (306)766-7730(PHIs) // 766-7607 (MHOs) Deputy MHO: Dr. Maurice Hennink (306) 766-7772 Mgr. Env. Public Health: Ian Harrison (306) 766-7756</p>	<p>Saskatoon Office #101 – 310 Idylwyld Drive North SASKATOON SK S7L 0Z2 PH: (306) 655-4605 FAX: (306) 655-4699 (PHIs) // (306) 655-4414 (MHOs) MHO: Dr. Simon Kapaj (306) 655-4482 Mgr: Vacant (306) 655-4631</p>
<p>Rosetown Office Box 1300 ROSETOWN SK S0L 2V0 PH: 882-2672 // FAX: (306) 882-6474 MHO: Dr. David Torr (306) 882-2672, Ext. 3, Option 3 Senior PHI: Jim Webster (306) 948-3323 Ext. 2769</p>	<p>Melfort Office Box 6500 MELFORT SK S0E 1A0 PH: (306)752-6310 // FAX: (306) 752-6353 MHO: Dr. Mohammed Khan (306) 752-6310 PHI Supervisor: Ryan Philipation (306) 752-6323</p>
<p>Prince Albert Office Public Health 1521 – 6th Avenue West PRINCE ALBERT SK S6V 5K1 PH: 765-6600 // FAX: (306) 765-6624 MHO: Dr. Kham Chokani (306) 765-6601 PHI Manager: Paul Ross (306) 765-6605</p>	<p>North Battleford Office Suite 101-11427 Railway Ave. NORTH BATTLEFORD SK S9A 3G8 PH: (306) 446-6400 // FAX: (306) 446-6018 MHO: Dr. Mandiangu Nsungu (306) 446-6400, Ext. 6426 Mgr. Env. Prot. Services: Ken Startup (306) 446-6420</p>
<p>La Ronge Office Box 1920 LA RONGE SK S0J 1L0 PH: (306) 425-8512 FAX: (306) 425-8550 (PHIs) // 425-8530 (MHOs) MHO: Dr. Rim Zayed (306) 425-8529 Acting Mgr. Env. Health: David Sampson (306) 425-8584</p>	<p>Roy Romanow Provincial Laboratory General Inquiry: 1-866-450-0000 Ph: (306) 787-3131 // Fax: (306) 798-0046 Website: https://www.saskhealthauthority.ca/Services-Locations/RRPL/Pages/Home.aspx</p>
<p>Saskatchewan Ministry of Health Chief MHO, Dr. Saqib Shahab (306) 787-4722 Director Env. Health Unit Tim Macaulay (306) 787-7128 Environmental Health Consultant- Wayne Johnson (306)787-7219 FAX: (306) 787-3237</p>	<p>Health Canada Website: http://www.hc-sc.gc.ca First Nation and Inuit Health – Saskatchewan Telephone: (306) 780-6561//FAX (306) 780-7733</p>

Other Contacts

<p>Sask Water Corporation Head Office, Moose Jaw Customer Service 1-888-230-1111 Website: http://www.saskwater.com</p>

Appendix J

Precautionary Drinking Water Advisory (PDWA) And Emergency Boil Water Order (EBWO)

Communications Protocol For WSA and MOE EPOs, Saskatchewan Health Authority and Municipalities June 2019

Introduction

The purpose of this Communications Protocol is to expand upon the communications component in Section 7.0. It repeats communications information contained within that section and provides a more detailed, step-by-step guide to informing the public when a Precautionary Drinking Water Advisory (PDWA) or Emergency Boil Water Order (EBWO) has been issued. It is intended to be a quick reference for WSA and MOE EPOs, SHA and Municipal Officials.

The Steps

a) Establish a Priority Contact List

WSA and MOE EPOs, SHA Regional Offices and Clients should work together to establish a priority contact list after it has been decided to issue a PDWA or EBWO. A priority contact list would include:

- Local Media (radio, TV and newspaper);
- Residents;
- Public facilities such as:
 - health care facilities;
 - restaurants, bars, hotels;
 - schools; and
- RCMP detachments.

b) Immediately Notify Priority Contact List

Once a PDWA or EBWO is issued, immediately contact those on the priority list.

For a PDWA EPOs and SHA are to:

- If a WSA regulated facility advise WSA EBSU (Environmental and Municipal Management Services Division (EMMSD));
- If a WSA regulated facility advise the municipality/owner and/or WSA CCS to contact local media (specifically local radio stations, followed by TV, including community cable outlets) for immediate public broadcast of the Advisory (sample media release attached);
- contact municipality/owner and ensure the municipality/owner informs all residents and public facilities about the PDWA and restrictions on water usage: (Immediate and appropriate methods should be used, such as door-to-door or telephone contact where reasonable, and continued local radio announcements, for thorough, and immediate, distribution of information. Communication should continue with local TV and newspaper announcements/updates. (sample media release attached));
- PDWAs will be posted on the www.SaskH2o.ca and CNPHI website. WSA and MOE is responsible for posting EBWOs/PDWAs on the websites and the EPO and SHA will advise WSA website administration staff of additions or deletions as soon as possible.
- ensure municipality/owner keeps the residents and EPOs advised of the community's progress on the remedial actions: (Where warranted there should also be ongoing discussions between EPOs and SHA on remedial actions.);
- EPO will ensure municipality/owner re-notifies residents on at least a quarterly basis in the event of an extended PDWA;
- contact the municipality/owner and ensure that the municipality/owner provides all public facilities with the Handout for Public facilities (see Handout, later in the Appendix).

For an EBWO, SHA and EPOs are to:

- advise Saskatchewan Ministry of Health, WSA EBSU, WSA website administration staff and if a WSA regulated facility, WSA CCS
- contact local media (specifically local radio stations, followed by TV, including community cable outlets) for immediate public broadcast of the Order (sample media release attached).

- contact municipality/owner and ensure officials inform all residents and public facilities about the EBWO and restrictions on water usage: (Immediate and appropriate methods should be used, such as door-to-door or telephone contact where reasonable, and continued local radio announcements, for thorough, and immediate, distribution of information. Communication should continue with local TV and newspaper announcements/updates. (sample media release attached));
- ensure municipality/owner keeps the residents and SHA advised of the community's progress on the remedial actions: (There should also be ongoing discussions between SHA and EPOs on remedial actions. In addition, the SHA is to contact public facilities regarding added precautions to ensure safe usage of water.);
- ensure municipality/owner periodically re-notifies residents in the event of an extended EBWO.
- EBWOs will be posted on the www.SaskH2o.ca and CNPHI website. WSA and MOE is responsible for posting EBWOs/PDWAs on the websites and the EPO and SHA will advise WSA website administration staff of additions or deletions as soon as possible.
- The WSA Environmental Management and Municipal Services Division and Saskatchewan Ministry of Health staff will be available to assist both EPOs/SHA to quickly respond to any drinking water related incident that has had or may have had an affect on water quality or public health that cannot be handled at the local level.

c) Ensure Public Communication Includes Important Information

For both PDWA and EBWO, all notification to residents and public facilities should include:

- instructions on how long to boil the water;
- instructions for acceptable uses of both boiled and non-boiled water;
- precautions for drinking; and
- precautions for washing foods and dishes.

This information should be included in the public notices that are posted throughout the community. For examples of public notices, please refer to the model PDWA and EBWO notices in Appendix F. The same information should also be included in communication with the priority contact list, as outlined in the sample PDWA and EBWO media releases attached to this document.

NOTE: It is a good idea for the municipality/owner to establish a tracking system when posting public notices. Know where these have been posted so that they can be taken down as soon as the PDWA/EBWO is lifted.

d) Media Contact

Media inquiries into a PDWA or EBWO will be handled co-operatively by SHA and WSA and MOE. For WSA regulated facilities, WSA Communications and Client Services Division will lead with assistance from EPOs and local SHA Public Health Offices to work with clients to handle local media regarding PDWAs and EBWOs; This includes issuing media releases about the advisory so that the local media can help keep all residents informed (sample media release attached).

In situations where many people are ill, where the type of water contamination is *E. coli* or cryptosporidium, where a large population center has been affected (overloading regional resources) and where media interest is expected to be intense, government media releases will be a joint effort by lead- (WSA, MOE or Saskatchewan Ministry of Health) and supported by EPOs/local SHA Public Health Offices.

e) Public Inquiry Telephone Line

In the case of an EBWO or a PDWA that is issued close to the end of a working day or on a weekend the municipality/owner should ensure that there is a contact number where the public can receive information. In light of this the phone number used on the media release and public information sheet should run after hours or forward the caller to another number where a contact can be reached.

Where circumstances warrant, and depending on the magnitude of the situation, EPOs (for PDWA) and local SHA Public Health offices (for EBWO) are to make arrangements for a local after-hours telephone inquiry line to answer questions from residents and public facilities. Examples include situations where many people are ill, where the type of water contamination is *E. coli* or cryptosporidium, where a large population center is affected (overwhelming regional resources) and provincial media interest is intense.

f) Ensure Follow-up

Environmental Project Officers (for PDWA) and local SHA Public Health Offices(for EBWO) are to:

- ensure residents are informed of progress (sample media release attached); and ensure residents are informed when EBWO or PDWA is lifted (sample media release attached).

Sample Media Releases to follow:

Immediate Release for PDWA

Immediate Release for EBWO

Follow-Up/Update for PDWA/EBWO

Final Follow-Up for PDWA/EBWO

Handout for Public Facilities

**Immediate Release:
Sample PDWA Media Release
(faxed to local radio, TV stations)**

Precautionary Drinking Water Advisory Issued for _____ (municipality/owner)

Water Security Agency, in consultation with the Saskatchewan Health Authority, has issued a Precautionary Drinking Water Advisory for the _____ region/municipality/owner due to (state reasons)_____.

All residents and users of water from the _____ system are notified to:

This Precautionary Drinking Water Advisory applies to residents and users of *Client's Name's* water distribution system *location of affected area*, and is effective *immediately or insert future date at XX:XX a/pm*.

Water Security Agency, in consultation with the Saskatchewan Health Authority, has issued a Precautionary Drinking Water Advisory for the *Client's Name's* due to *type of upset cause* resulting in *result/effect to water quality/system* and therefore the safety of the drinking water supply cannot be ensured at all times. Consumers are hereby notified:

- (a) boil all water, used for drinking purposes, for at least one (1) minute, at a rolling boil, prior to use;
- (b) boil water to be used for other activities where it may be ingested, including:
 - (i) brushing teeth or soaking false teeth;
 - (ii) washing fruits and vegetables;
 - (iii) food or drink which will not be subsequently heated; and
 - (iv) ice cubes;
- (c) not use the water for washing dishes, unless the water has been boiled or the dishes are sanitized in another fashion. Washed dishes and utensils can be soaked in a bleach water solution (approximately 2 tablespoons of bleach per gallon or 10 ml of bleach per liter of water) for at least two minutes after being washed to kill any bacteria which may be present.
Note: Do not mix bleach with soaps or detergents.
- (d) not drink from any public drinking fountains supplied with water from the public water supply;
- (e) ensure that younger children and infants are sponge bathed;
- (f) use an alternative water source known to be safe, if they do not wish to boil the water; and
- (g) consult with your physician if you have cuts or rashes that are severe before using the water.

Under most circumstances, there is no need to boil water used for other household purposes. Adults, adolescents and older children may shower, bathe or wash using tap water but should avoid swallowing the water. Laundry may be washed in tap water, either by hand or by machine.

This Advisory is effective on the **date and time listed above**, and will not be lifted until the water supply is determined to be completely safe.

If you require any additional information, please contact the following:

Community Name

Water Security Agency – EMMS Division
Water Security Agency – Communications Manager
Saskatchewan Health Authority, *Office Location*

306 – ***XXX - XXXX***
306 – ***XXX - XXXX***
306 – 694-8914 Media Inquiries
306 – ***XXX - XXXX***

Issuing EPO name – Environmental Project Officer
Water Security Agency

**Immediate Release
Sample EBWO Media Release
(faxed to local radio, TV stations)**

Emergency Boil Water Order Issued for _____(municipality/owner)

The Saskatchewan Health Authority, Water Security Agency and the _____(municipality/owner) have announced that, effective immediately, an Emergency Boil Water Order has been issued for the _____ region/municipality/owner.

- (a) boil all water, used for drinking purposes, for at least one (1) minute, at a rolling boil, prior to use;
- (b) boil water to be used for other activities where it may be ingested, including:
 - (i) brushing teeth or soaking false teeth;
 - (ii) washing fruits and vegetables;
 - (iii) food or drink which will not be subsequently heated; and
 - (iv) ice cubes;
- (c) not use the water for washing dishes, unless the water has been boiled or the dishes are sanitized in another fashion. Washed dishes and utensils can be soaked in a bleach water solution (approximately 2 tablespoons of bleach per gallon or 10 ml of bleach per liter of water) for at least two minutes after being washed to kill any bacteria which may be present.

Note: Do not mix bleach with soaps or detergents.

- (d) not drink from any public drinking fountains supplied with water from the public water supply;
- (e) ensure that younger children and infants are sponge bathed;
- (f) use an alternative water source known to be safe, if they do not wish to boil the water; and
- (g) consult with your physician if you have cuts or rashes that are severe before using the water.

Under most circumstances, there is no need to boil water used for other household purposes. Adults, adolescents and older children may shower, bathe or wash using tap water but should avoid swallowing the water. Laundry may be washed in tap water, either by hand or by machine.

This Emergency Boil Water Order is issued due to (state reasons) _____, and will not be lifted until the water supply is determined to be completely safe. The Saskatchewan Health Authority, Water Security Agency and the _____(municipality/owner) are working together to resolve the problem as quickly as possible, and will continue to keep residents advised.

For more information, please contact:

Community Name

Water Security Agency – EMMS Division
Water Security Agency – Communications Manager
Saskatchewan Health Authority, *Office Location*

306 – XXX - XXXX
306 – XXX - XXXX
306 – 694-8914 Media Inquiries
306 – XXX – XXXX

**Follow-Up/Update
Sample PDWA/EBWO Media Release
(faxed to local radio, TV and newspapers)**

Emergency Boil Water Order/Precautionary Drinking Water Advisory Continues

The Saskatchewan Health Authority, Water Security Agency and the _____ (municipality/owner) are advising _____ residents that there continues to be a high level of risk with the _____ drinking water system. Water used for drinking, cooking, food preparation, making ice cubes, washing dishes or brushing teeth must be brought to a rolling boil for at least one minute.

The EBWO/PDWA remains in place due to (state reasons)_____.

“Our top priority is protecting the health of the public, and we are taking every precaution necessary,” said (local MHO / local EPO or Environmental Services Manager in the case of a PDWA).

This Emergency Boil Water Order/PDWA will not be lifted until the water supply is determined to be completely safe. Water Security Agency and the _____ (municipality/owner) are conducting a full review of the water systems and will be consulting with the Saskatchewan Health Authority on risks to public health. The public will continue to be advised.

For more information, please contact:

Community Name

Water Security Agency – EMMS Division

Water Security Agency – Communications Manager

Saskatchewan Health Authority, *Office Location*

306 – *XXX - XXXX*

306 – *XXX - XXXX*

306 – 694-8914 Media Inquiries

306 – *XXX - XXXX*

**Final Follow-Up
Sample PDWA/EBWO Media Release
(faxed to local radio, TV and newspapers)**

Emergency Boil Water Order/Precautionary Drinking Water Advisory Lifted

The Saskatchewan Health Authority/Water Security Agency has lifted the Emergency Boil Water Order/Precautionary Drinking Water Advisory for _____ (municipality/owner).

“The factors that caused the issuance of the Order/Advisory have been rectified,” said (local MHO/local EPO or Environmental Services Manager in the case of a PDWA). “Residents no longer need to boil their water before drinking or using the water in other ways.”

For more information, please contact:

Community Name

Water Security Agency – EMMS Division

Water Security Agency – Communications Manager

Saskatchewan Health Authority, *Office Location*

306 – XXX - XXXX

306 – XXX - XXXX

306 – 694-8914 Media Inquiries

306 – XXX – XXXX

Handout for Public Facilities Precautions to be taken during a Precautionary Drinking Water Advisory or Emergency Boil Water Order at Public Facilities

The following precautionary measures for public facilities are in addition to the measures listed in the Precautionary Drinking Water Advisory (PDWA) or Emergency Boil Water Order (EBWO) Notice. The PDWA or EBWO notice is typically provided to all public facilities by the local municipality. A copy can also be obtained from the authority that issues the advisory. **Note: These measures do not apply to all public premises. Those that do not apply to your premises operation should be ignored.**

General Precautions

- Advisory and order notices need to be posted at locations that are highly visible to the public (e.g. at the front entrance, inside public and staff washrooms, kitchen areas, staffrooms, etc.).
- Tap water must not be served to your patrons, or used for food preparation, for the duration of the drinking water advisory.
- Drinking water fountains should be controlled by shutting them off, or bagging and posting with a 'Do Not Drink' notice.

Safe Drinking Water choices:

- Bottled water from an approved source.
- Tap water can be disinfected by bringing tap water to a rolling boil for at least 1 minute, then cooling before using. The disinfected water can be stored in a sanitized food grade container in a refrigerator.
- Water treatment equipment may be sufficient however, please contact your local SHA regional Office to confirm.

Specific Precautions

- Discard all ice made just prior to and while the drinking water advisory remains in effect and thoroughly wash, rinse, and sanitize ice trays using boiled water or a safe source of water (e.g. bottled water) and an approved sanitizer.
- All equipment directly connected to the public water system must be turned off (e.g. automatic ice making equipment, post mix soft drink dispensing units such as slush machines, drink dispensers and other similar equipment).
- Commercial coffee brewers generally operate at a brew temperature of 88–90°C (190-194°F) with this temperature being thermostatically maintained in the water tank. Brewing is achieved by displacement of the hot water with cold water within the tank. The temperature attained by the hot water will control bacterial and protozoan organisms of concern during a precautionary drinking water advisory or emergency boil water order:
- If the coffee produced by your coffee maker is held in the pot at 72°C (162°F) for 1 minute, parasite oocysts will be inactivated. If your coffee maker is unable to meet adequate temperature and is directly plumbed to a water supply, it should be disconnected or no longer used.
- Healthy adults may shower or bathe as long as they are aware not to swallow any tap water.
- Infants, young children and people that have breaks in skin, recent surgical incisions, open wounds or blisters/sores should be sponge bathed with bottled water or an approved water alternative. Children and patients that are not mentally competent should be supervised when bathing to ensure water is not swallowed.

Actions to be taken when the PDWA or EBWO has been lifted

- All water lines must be completely flushed for at least 5 minutes.
- Equipment directly connected to the water lines needs to be flushed, cleaned and sanitized as per manufacturer's instructions.
- All in-line water filters need to be replaced. Filter media that cannot be replaced should be backwashed and/or disinfected as per manufacturer's direction.
- Water softeners should be run through one regeneration cycle.
- Drain and refill hot water tanks if set below 45°C (113°F).