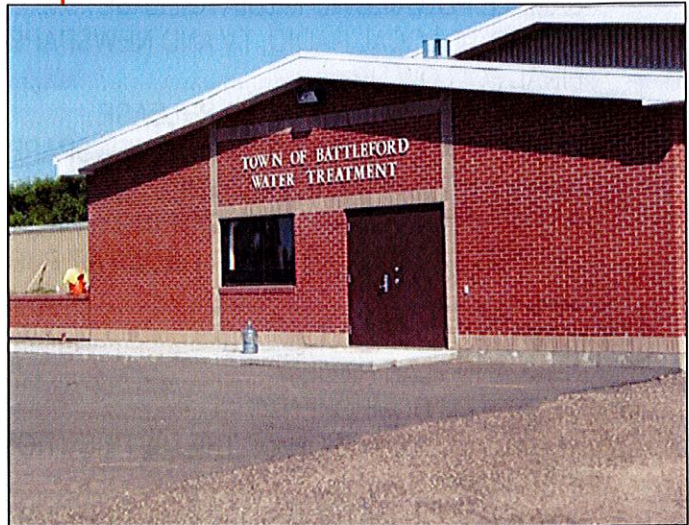




WATER WORKS EMERGENCY PLAN

TOWN OF BATTLEFORD
UTILITY DEPARTMENT



Community/Waterworks Name
Waterworks Owner
Source Water
Water Treatment Plant Location
Contact Information

Town of Battleford
Town of Battleford
Ground Water – 4 Wells Adjacent to the North Saskatchewan River
392 25th Street West, Battleford, SK
Phone: 306-937-6224 and/or 306-937-6228 Cell: 306-441-7090
Fax: 306-937-5963

Revised

2020-January-06

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INTRODUCTION AND POLICY STATEMENT

This Emergency Response Plan is intended to guide the actions of the Town of Battleford personnel during an emergency response that may affect water quality. Its sole purpose is to ensure the safety of Town personnel, consumers, protection of life, property and the environment in the most efficient way possible in the event of an unexpected incident.

Performance goals and acceptable levels of service:

<i>Life Safety</i>	The primary goal of the water system is to ensure the safety of its users. At all times, safe, clean water should be provided to the public. Examples of conditions that should never occur are the failure of the distribution system; the distribution of contaminated water; the release of hazardous materials and the collapse of structures.
<i>High Quality Water</i>	Supply Consumers with sufficient quantities of safe and acceptable water
<i>Fire Suppression</i>	Supply enough water for fire suppression and make such water available as soon as possible after an emergency
<i>Public Health Needs</i>	Supply the following needs with potable water in the allowable time span after an emergency.
<i>Commercial & Business</i>	Supply businesses relying on water as soon as possible

EMERGENCY CONTACT LIST

PERSONNEL						
	CONTACT NAME	EMAIL	HOME	CELL	WORK	FAX
Manager	Whittleton, Aubrey	aubrey@battleford.ca	306-445-1019	306-441-7090	306-937-6228	
Plant Operators:	Michelman, Mark	wtp@battleford.ca	306-937-3025	306-441-7752	306-937-6224	
	Kolosnjaji, Mihajlo	wtp@battleford.ca	306-446-3169	306-480-6113	306-937-6224	
	Day, Glenn	wtp@battleford.ca		306-441-3342	306-937-6224	
Maint. Personnel	Schiele, Tate	wtp@battleford.ca		306-317-6550	306-937-6224	
Admin. Assistant	Noble, Kayla	works@battleford.ca		306-480-6606		306-937-5963

EMERGENCY CONTACTS:

	CONTACT NAME	EMAIL	HOME	CELL	WORK	FAX
Public Health Inspector						
	Startup, Ken	Ken.Startup@saskhealthauthority.ca		306-441-2098	306-441-0522	306-446-6432
	Piatt, Roger	Roger.Piatt@saskhealthauthority.ca		306-441-1810	306-441-4061	306-446-6432
Medical Health Officer						
	Dr. Nsungu			306-441-5572		306-446-6432
Environmental Project Officer						
	Dahl, Bruce	bruce.dahl@wsask.ca		306-230-3184	306-933-8387	306-933-6820
Saskatchewan Emergency Planning						
	Regina				306-787-9563	
	Saskatoon				306-933-6116	
SE Spill Emergency Number						
	24 Hour Line				800-667-7525	
	Outside Province				306-953-2980	
Police						
	Local				306-446-1720	306-446-1738
Ambulance						
					306-310-911	306-445-4622
Fire Department - 911						
	Thompson, Geoff	geoff@battleford.ca		306-441-1534	306-937-6208	306-937-3719
	Gabrich, Larry	firechief@battleford.ca			306-937-2458	306-937-3719
Municipal Engineer – Catterall & Wright						
	Rogal, Ryan	r.rogal@cwce.ca		306-299-4162	306-343-7280	306-956-3199
	McLeod, Shaun	s.mcleod@cwce.ca		306-291-1718	306-343-7280	306-956-3199

Pump Manufacturer - Anderson Pump House						
	Kirby, Howard			306-386-2001	306-937-7741	306-937-3766
	Smith, Gerry			306-441-3482		
Chlorinator Manufacturer - Regal Manufacturing						
Clear-Tech	Administration				306-664-2522	306-665-6216
	Ordering	orders@cleartech.ca			800-387-7503	888-281-8109
	Day, Rick	rday@cleartech.ca			800-387-7503	888-281-8109
	24 Hour Emergency				306-664-2522	
Chemical Supplier - Clear-Tech						
	Day, Rick	rday@cleartech.ca		306-280-7112	800-387-7503	888-281-8109
Excavation Services - Sanburn Construction						
	Mahon, Fred	sunburn.construction@sasktel.net		306-441-7490	306-937-3898	
Call Before You Dig #						
	Sask. First Call				866-828-4888	306-525-2356
	Access				866-363-2225	
Electrician						
Fedler Electric	Fedler, Rick			306-441-8656	306-445-3885	
	Fedler, Rodney			306-441-6494	306-445-3885	
Johns Electrical					306-445-7800	
L7 Electric		APL7@sasktel.net			306-446-2425	
LUK Plumbing					306-445-6707	
General Plumbing					306-445-2341	
Plumbing Services						
River City	Winterhault, Todd			306-441-6920	306-446-0496	306-445-4497
	Dimmick, Brent			306-441-1634	306-446-0078	306-445-4497
P & W Mechanical		pwmac@sasktel.net			306-446-2770	
General Plumbing					306-445-2341	
Howie's Countryside		hbaxter@howiesplumbing.ca			306-441-7353	
Hydros Plumbing		hydrosplumbing@gmail.com			306-445-0442	
Big Sky Mechanical					306-480-5030	
Cheyne's Plumbing		travis@cheynesplumbing.com			306-445-6691	
LUK Plumbing					306-445-6707	
Regal Plumbing					306-445-5903	
Hawtin Plumbing Services					306-441-4158	
Bulk Water Hauler						
Hospital						
Battleford Union					306-446-6600	306-446-4114
Bottled Water Supplier						
Battleford's Pure Water				306-441-1489		
Easthill Enterprises				306-441-7228		
Culligan Water					306-445-6266	

PRIORITY CONTACTS						
	CONTACT NAME	EMAIL	HOME	CELL	WORK	FAX
Hospital						
Battleford Union					306-446-6600	306-446-4114
Pharmacies						
Remedy's Rx					306-937-2600	
Battlefords Co-op					306-446-5520	
Childcare Facilities						
Playtime Co-Operative				306-441-7261	306-937-3184	306-937-3926
Heritage Christian					306-446-3180	
Senior Citizen Home						
District Care Centre					306-446-6900	306-937-2258
Battleford Housing	Meadow Sweet Manor				306-937-3055	306-446-1277
	Golden Years Lodge				306-937-3055	306-446-1277
Bakeries						
29 th Street Market					306-937-3377	
Restaurants						
Pennydale Junction					306-937-3544	
Li King					306-937-7363	
R & J Garden					306-937-5555	
Subway					306-937-2048	
Tim Hortons					306-446-2088	
Busters Pizza					639-390-3700	
Water Companies						
Battleford's Pure Water				306-441-1489		
Easthill Enterprises				306-441-7228		
Culligan Water					306-445-6266	
School Boards						
Board Member – Battleford	Leask, Glen	glen.leask@skysd.ca		306-441-3534	306-937-7702	
Battleford Central						
Principal	Sommerfeld, Monique	bcs@skysd.ca			306-937-2112	306-937-7175
Vice Principal	Charabin, Lindsay				306-937-2112	306-937-7175
St. Vital Catholic						
Principal	Buglas, Don	stvital@skysd.ca			306-937-2233	306-937-7666
Secretary					306-937-2233	306-937-7666
Christian Heritage						
Principal	Weibe, Gerald	heritage@skysd.ca			306-446-3188	306-446-3187
Admin Assistant	Geunther, Wanda				306-446-3188	306-446-3187

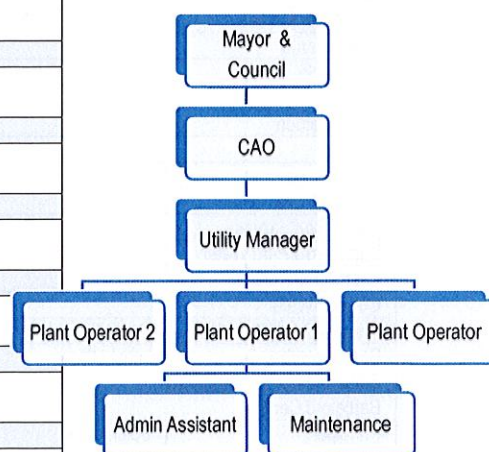
UTILITIES						
	CONTACT NAME	EMAIL	HOME	CELL	WORK	FAX
Sask Power					888-757-6937	
	Stuckless, Everett	estuckless@saskpower.com		306-227-4033	306-934-7975	
Sask Energy					800-567-8899	
	24 Hours				888-700-0427	
Sask Tel					855-444-9464	
	24 Hour				611	
North Battleford	Dereniwsky, Suzane	Suzanne.Dereniwsky@SaskTel.com		306-481-3660	306-446-5348	306-445-7337
Regina	Chupa, Diane	diane.chupa@sasktel.com			306-777-1223	
Sask. First Call					866-828-4888	306-525-2356
Access Cable					866-363-2225	
Bell	Internet – 24 Hours				866-875-9591	

	Internet				800-773-2121	
Telus	24 Hours				866-558-2273	
					310-3100	
Virgin Mobile					888-999-2321	
Sask Water	Saskatoon, SK				306-933-1118	
CP Railway	Emergencies				800-716-9132	
	Head Office				888-333-6370	
CN Railway	Emergencies				800-465-9239	

ORGANIZATION & RESPONSIBILITIES

WATERWORKS EMERGENCY PLANNING TASK FORCE

Mayor		
Leslie, Ames	191 1 st Avenue Battleford, SK S0M0E0	Email: mayorleslie@battleford.ca Work: 306-386-7074 Cell: 306-441-2412
Designate Council Member		
Laing, Doug	191 21 st Street West Battleford, SK S0M0E0	Email: councilorlaing@battleford.ca Work: 306-937-7741 Cell: 306-441-7706
Waterworks Manager		
Whittleton, Aubrey	281 26 th Street West Battleford, SK S0M 0E0	Email: aubrey@battleford.ca Work: 306-937-6228 Cell: 306-441-7090
Town CAO		
Enns-Wind, John	322 30 th Street West Battleford, SK S0M0E0	Email: john@battleford.ca Work: 306-937-6203 Cell: 306-430-7624
Project Officer		
Dahl, Bruce	101-108 Research Drive Saskatoon, SK	Email: bruce.dahl@wsask.ca Work: 306-933-8387 Cell: 306-933-8387
Medical Health Officer		
Dr. Nsungu		Email: Work: 306-446-6426 Cell: 306-441-5572
Other:		
MacAngus, Ross		Email: publicsafetyofficer@battleford.ca Work: Cell: 306-441-1534



WATER QUALITY CRISIS MANAGEMENT

	CONTACT NAME	ADDRESS	EMAIL	WORK	CELL
Water Quality Crisis Coordinator (Utility Manager)	Whittleton, Aubrey	281 26 th Street West Battleford, SK S0M 0E0	aubrey@battleford.ca	306-937-6228	306-441-7090
Public Relations Coordinator	Enns-Wind, John	322 30 th Street West Battleford, SK S0M0E0	john@battleford.ca	306-937-6203	306-430-7624
Coordinator – Mayor	Ames, Leslie	191 1 st Avenue Battleford, SK S0M0E0	mayorleslie@battleford.ca	306-386-7074	306-441-2412
Personnel Lead Hand(s)	Kolosnjaji, Mihajlo	2491 100 th Street, North Battleford, SK S9A3K6	wtp@battleford.ca		306-480-6113
Advisors – WSA	Dahl, Bruce	101-108 Research Drive Saskatoon, SK	bruce.dahl@wsask.ca	306-933-8387	306-230-3184
Advisors –Health District	Dr. Nsungu		306-446-6426	306-446-6426	306-441-5572
Advisor – EMC	MacAngus, Ross		publicsafety@battleford.ca	306-441-5607	
Advisor – Administrator	Enns-Wind, John	322 30 th Street West Battleford, SK S0M0E0	john@battleford.ca	306-937-6203	306-430-7624

NOTIFICATION AND COMMUNICATION

The purpose of this section is to identify a process for system personnel to notify system users about an emergency and for system users to notify system personnel about an emergency.

In general, a waterworks incident needs to follow these steps:

1. The waterworks owner/operator(s) monitor the distribution system and treatment plant for trigger events (as defined in section 6). The local Health District monitors the public for a public health trigger;
2. all incidents are reported to the Water Quality Crisis Coordinator;
3. the Water Quality Crisis Coordinator evaluates the event, determines if a trigger has been met and classifies all events even those without a technical action plan (TAP) (see section 6).
4. The Water Quality Crisis Coordinator activates the Water Quality Crisis Management Cell (CMC), if called for;

5. The CMC directs the implementation of the TAP and recommends further actions, if required. This may require the notification of the Emergency Measures Organization for the municipality or corporation;
6. The CMC utilizes the Communication Plan to advise the public.
7. When the emergency is over, CMC is deactivated; and
8. The Water Quality Crisis Coordinator prepares a report on the incident and presents it to the Waterworks Emergency Planning Task Force for evaluation.

System personnel will typically inform system users using one or more of the following methods:

- ☒ phone ☐ phone tree ☐ flyer ☐ personal contact
☒ media release ☒ door to door or ☐ other

System users need to also be given the names and phone numbers of the system personnel to contact in case of an emergency. Typically, billing or newsletters are used to provide this information.

MEDIA COMMUNICATIONS

In any crisis, the media will receive information only from the designated spokesperson(s). The spokesperson(s) will call a media conference, give information over the phone or release a written statement.

The Town of Battleford website (www.battleford.ca) and social media pages will be updated as information becomes available. In the case of a major emergency or disaster, the emergency hotline will be manned 24 hours a day until the CMC determines that the crisis has ended. The phone at the office (306-937-6224) will be utilized for this purpose.

MEDIA CONTACTS:

SaskAlert	Jean Longpre (306) 787-6678 OR Call Your Saskatchewan Emergency Management & Fire Safety Field Officer
Battlefords News Optimist	(306) 445- 7261
Battlefords Now	(306) 445- 2477 News Room: (306) 446- 6397 News Director: Colin McGarrigle colin.mcgarigle@jpbj.ca
Q98 97.9 FM	Main Switchboard: (306) 445-2477 Newsline: (306) 446-6397 General Manager: Karl Johnston After Hours Emergency Only: Mike Aimoe Aimoe@jpbq.ca (306) 480-4570
93.3 FM The Rock	Same as Q98 above
1050 AMM CJNB	Same as Q98 and 93.3 FM above Email Newsline: cjnbnews@jpbq.ca
Jim Pattison Group	(604) 688-6764 North Battleford Radio Stations After Hours Emergency Only: Kathy Gallant kathy.gallant@jpbj.ca (306) 480-4570 Mike Aimoe (Station Manager) Mike.aimoe@jpbj.ca (306) 480-4570 Matt Ryan Matt.ryan@jpbj.ca (306) 290-7643

OFFICIAL STATEMENTS

The statements listed below shall be included in your Waterworks contingency and usually will not be found in your Corporate/Municipal Emergency Plan. Precautionary Drinking Water Advisory, Emergency Boil Water Order & Emergency Boil Water Notice

PRECAUTIONARY DRINKING WATER ADVISORY

This Advisory applies to all residents and users in the _____ and is effective: __:00 am/pm ____ day, Month Date, Year.

Pursuant to clause 36(1)(a) of *The Environmental Management and Protection Act, 2010* this Precautionary Drinking Water Advisory is issued due to _____

_____ and therefore the safety of _____ 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 immediately 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:

Municipal Office -	306-???-????
Water Security Agency – Environmental & Municipal Management Services Division	306-???-????
Water Security Agency - Communications Manager	306-694-8914
Media Inquiries	306-???-????
SaskHealth Authority	306-???-????

Environmental Project Officer
Water Security Agency

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 minute, at a rolling boil, prior to usage;
- (b) advising that such boiled water should be used as the water 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;
 - (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 un-operational all public drinking fountains supplies with water from the public water supply.
- (d) making the attached "Emergency Boil Water Notice" available to users of the public water supply by:
 - (a) (v) posting in conspicuous places in public buildings and areas in the municipality(ies). (vi) 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 the completion of any necessary work and receipt of at least two consecutive series of satisfactory water sample test results taken from the public water supply, as directed by Saskatchewan Environment.

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 Public Appeals Regulations (excerpt for the regulations, pages 5-10, attached).

Medical Health Officer or Designate

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 _____ Health Region, 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:

- boil water used for drinking purposes for at least one minute at a rolling boil prior to use;
 - do not drink from any public drinking fountains supplied with water from the public water supply;
 - use an alternative water source known to be safe, if they do not wish to boil the water.
 - boil water for at least one minute at a rolling boil when it is to be used for other activities where it may be ingested, including: (i) brushing teeth or soaking false teeth;
1. dishwashing, unless sanitized in another fashion;
 2. using water in food or drink which will not be subsequently heated;
 3. making ice cubes; and
 4. washing fruit and vegetables.

Under most circumstances, residents do not 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. Younger children and infants should be sponge-bathed. Residents should also consult with a physician before using the water if they have severe cuts or rashes. Laundry may be washed in tap water, either by hand or by machine.

This Advisory is effective immediately??? or enter date, time and or location it takes effect ???, and will not be lifted until the water supply is determined to be completely safe.

Water Security Agency, _____ (municipality/owner) and the _____ Health Region are working together to resolve the problem as quickly as possible, and will continue to keep residents advised.

For more information, please contact:

Town Office	306 - 937-6200
WSA Policy & Communications Division	306 - 694-8914
Media Inquiries	306 - _____
WSA - _____ Head/field Office	306 - _____
(Inquiries regarding PDWA) _____	
Health Region	306 - _____

IMMEDIATE RELEASE
SAMPLE EBWO MEDIA RELEASE
(FAXED TO LOCAL RADIO, TV STATIONS)

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

The _____ Health Region, 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.

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

- boil water used for drinking purposes for at least one minute at a rolling boil prior to use;
 - not drink from any public drinking fountains supplied with water from the public water supply;
 - use an alternative water source known to be safe, if they do not wish to boil the water.
 - boil water for at least one minute at a rolling boil when it is to be used for other activities where it may be ingested, including: (vi) brushing teeth or soaking false teeth;
1. using water in food or drink which will not be subsequently heated;
 2. dishwashing unless sanitized in another fashion;
 3. making ice cubes; and
 4. washing fruit and vegetables.

Under most circumstances, residents do not 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. Younger children and infants should be sponge-bathed. Residents should also consult with a physician before using the water if they have severe cuts or rashes. Laundry may be washed in tap water, either by hand or by machine.

This 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 _____ Health Region, 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:

Municipal Office	306 - _____ - _____	
WSA Policy & Communications Division	306 - 694-8914	
Media Inquiries		
WSA - _____ Head/field Office	306 - _____ - _____	(Inquiries regarding PDWA)
_____ Health Region	306 - _____ - _____	

For any media inquiries please contact applicable Health Region

Flood conditions Trigger events: (Disaster)

widespread flooding occurs.

- Action** notify WSA – Environmental Project Officer (EPO);
notify users of the potential for water contamination, loss of pump, power, etc. Users should be advised to store some drinking water in advance and to boil any suspect water for at least one minute;
notify priority customers;
contact local media for public service announcement (where all customers cannot be notified by phone); and
contact government agencies (see below) for advice and assistance.
- Contact** Owners of water system, WSA (Local EPO), Saskatchewan Emergency Planning and others as necessary.

Outbreak of a waterborne disease Trigger events: (Major emergency to disaster)

local Health District notifies the water system of a confirmed outbreak.

- Action** notify WSA – EPO;
notify users of the potential for water contamination. Users should be advised to boil any suspect water for at least one minute;
notify priority customers;
contact local media for public service announcement (where all customers cannot be notified by phone); and
contact government agencies (see below) for advice and assistance
- Contact** Owners of water system, WSA (Local EPO), Saskatchewan Emergency Planning and others as necessary

Contamination of source Trigger event: (Major emergency)

gross deterioration of source water due to a spill, vehicle accident or natural causes.

- Action** shut down pump;
notify WSA – Environmental Project Officer;
notify users;
notify priority customers;
contact government agencies (see below) for advice and assistance; and
contact local media for public service announcement (where all customers can not be notified by phone).
- Contact** Owners of water system, WSA (Local EPO), Saskatchewan Emergency Planning and others as necessary.

Loss of source Trigger event: (Major emergency)

Access to source water is lost due to intake problems or natural causes

- Action** shut down pump;
notify WSA – EPO;
notify users;
notify priority customers; and
contact government agencies (see below) for advice and assistance.
- Contact** Owners of water system, WSA (Local Environmental Project Officer) and others as necessary.

Treatment process failure

A Loss of chlorine residual leaving plant Trigger events:

chlorine level leaving the plant is less than 0.1 mg/l free chlorine. (Minor emergency)

- Action** notify WSA – EPO;
notify users of the potential for water contamination. Users should be advised to boil any suspect water for at least one minute; ▯ notify priority customers; and
contact government agencies (see below) for advice and assistance.
- Contact** Owners of water system, WSA (Local EPO), Chlorinator and chlorine suppliers

B Loss of chlorine residual in distribution system Trigger events: (Major emergency)

chlorine levels at any place in the distribution system is less than 0.1mg/l free chlorine or 0.5 mg/l total chlorine.

- Action** notify WSA– EPO;
notify users of the potential for water contamination. Users should be advised to boil any suspect water for at least one minute;
notify priority customers; and
contact government agencies (see below) for advice and assistance.
- Contact** Owners of water system, WSA (Local Environmental Project Officer), Chlorinator and chlorine suppliers

C Increased turbidity in filter effluent Trigger event: (Minor emergency)

the effluent turbidity of a filter is greater than 0.3 N.T.U. Sudden increases generally indicate a system disturbance or treatment failure

- notify WSA – EPO;
notify users of the potential for water contamination. Users should be advised to boil any suspect water for at least one minute; ▯ notify priority customers; and
contact government agencies (see below) for advice and assistance.
- Contact** Owners of water system, WSA (Local EPO)

D Microbial contamination detected Trigger event: (Routine incident to major emergency)

a positive microbial test result is received for the treated water.

- Action** Follow Saskatchewan's Bacteriological Protocol for Waterworks Regulated by Water Security Agency and Saskatchewan Environment EPB 505 procedures document
- Contact** As per Saskatchewan's Bacteriological Follow-up procedures document.

E Pump system failure Trigger events: (Minor Emergency)

all pumps fail and unable to supply water or distribution system pressure drops

- Action** notify WSA – EPO;
notify users of interruption of service; and
notify priority customers.
- Contact** Owners of water system, WSA (Local EPO), Pump supplier

F	Other treatment process failure Trigger events: (Routine incident to major emergency) loss of coagulation, or other significant process failures.
Action	notify WSA – EPO; notify users of the potential for water contamination. Users should be advised to boil any suspect water for at least one minute; notify priority customers; and contact government agencies (see below) for advice and assistance
Contact	Owners of water system, WSA (Local EPO)
Power failure Trigger events: (Minor emergency) power outage.	notify WSA – EPO; start backup generator, if possible; notify users of interruption of service if backup pump not capable of maintaining supply; notify priority customers; and call SaskPower.
Contact	Owners of water system, WSA (Local EPO)
Distribution system problems	A Backflow or back siphonage/ significant loss of pressure in the system Trigger events: (Major emergency) backflow or contamination is widespread throughout the distribution system
Action	notify WSA – EPO; notify users of to boil their water for at least one minute or take other disinfection procedures or as instructed by SE ; notify priority customers; and purge and disinfect lines as directed
Contact	Owners of water system, WSA (Local EPO)
B Water breaks - sanitary repair procedures Trigger event: (Major emergency) main line breaks	Repairing a main break is the most common type of emergency maintenance in a distribution system. Depending on site-specific conditions, a main break may be a source of contamination. For example, if the damaged pipe is below the water table or in contact with a sewage or storm water main, contamination may occur. As noted, maintenance procedures differ for main breaks between those breaks likely and unlikely to cause contamination. Contact your local EPO if you are unsure about whether contamination is expected for a break.
Action	If contamination is not expected: call excavation contractor; treat the replacement pipe and fittings with a chlorine solution; and notify downstream users of interruption of water service, if required
	If the existing main is partially or wholly dewatered, some of the following steps may be necessary to repair the main: Actions (AWWA C651-99): control water loss by completely or partially shutting down the main. flushing may be used to minimize flow toward the damaged main, thus reducing the extent of possible contamination; water should be reduced to a level below the break as quickly as possible. Groundwater may be treated with hypochlorite while repairs are underway. If the water appears to be clear, a 25 to 50 ppm dose may be sufficient. If sewage is present, a dose greater than 100 ppm is suggested; customers at higher elevations than the break should be notified to shut off the inlet valve at their meter to prevent siphoning of hot-water tanks or water softeners; extensive flushing may be used to purge possible contaminants and to bring clear water to the point of damage; chlorine residuals should be checked hourly to evaluate the effectiveness of pumping and flushing procedures; mains which have been repaired after a break or leak need to be cleaned, disinfected and monitored before being returned to service; and monitoring that follows a main disinfection or the addition of a new facility usually entails a check for microbial activity, pH, turbidity, color, disinfectant residual, odor and an analysis for volatile organic compounds that may be associated with the application of coatings
Contact	Owners of water system, WSA (Local EPO), excavation contractor and others as necessary.
Trigger event: (Major emergency) storage facility break	Emergency repair of finished water storage facilities is warranted by conditions such as: penetration due to localized corrosion; penetration or splits due to extensive metal loss; high turbidity and/or bacteria from excessive sediment; or animal contamination due to screen failure.
Action	Generally, emergency maintenance on steel or concrete storage facilities involves temporarily plugging a hole or other penetration in the facility wall. Ultimately, however, the temporary repair should be replaced with a welded patch. temporarily plug hole or other penetration in storage facility wall, if required notify WSA – EPO; flush the water from the storage facility; notify users if an interruption in service is expected; contact government agencies (see below) for advice and assistance; and contact contractor to permanently repair puncture. (i.e. welded patch on a steel reservoir).
Contact	Owners of water system, WSA (Local EPO), Saskatchewan Emergency Planning and others as necessary

Customer complaints Trigger event: (Routine incident)
consumer complaint

Water quality complaints should be logged in a retrievable format for tracking and reporting purposes. Tracking the complaints can help identify problem areas of the system. Temporary fixes (such as flushing) should not be used to address chronic water quality problems (such as excessive chlorine demand, turbidity, sediment, corrosive water, etc.).

Action log the water quality complaint;
investigate the water quality complaint;
Contact None

TRAINING AND PLAN REVIEW

Training is provided:

- for new employees during their introductory period;
- for transferred or promoted employees;
- when new equipment or materials are introduced which affect the response in an emergency;
- when emergency procedures are revised; and
- at least annually.

Testing of the plan is performed periodically so all individuals involved are aware of their duties.

MAJOR SYSTEM COMPONENTS

ADMINISTRATION AND OPERATIONS	SOURCE WATER	TRANSMISSION SYSTEM	TREATMENT FACILITIES	STORAGE
<ul style="list-style-type: none"> • personnel • facilities and equipment (buildings and computers) • records • emergency plan 	<ul style="list-style-type: none"> • watersheds and surface water sources • reservoirs and dams • groundwater sources • wells and galleries 	<ul style="list-style-type: none"> • intake structures • aqueducts • pump stations • pipelines, valves and other appurtenances 	<ul style="list-style-type: none"> • facility Structures (buildings, basins, and tanks) • controls (manual and computer) • equipment (feeder, pumps, and piping) • chemicals 	<ul style="list-style-type: none"> • tanks • valves • piping
DISTRIBUTION SYSTEM	ELECTRIC POWER	TRANSPORTATION	COMMUNICATIONS	CONSUMERS
<ul style="list-style-type: none"> • pipelines, valves and other appurtenances • pump or pressure reducing stations • materials (extra pipe, valves, hydrants, etc.) 	<ul style="list-style-type: none"> • substations • transmission lines • transformers • standby generators 	<ul style="list-style-type: none"> • vehicles (including construction equipment) • maintenance facilities • supplies, spare parts, and fuel • roadway infrastructure 	<ul style="list-style-type: none"> • telephone • radio • telemetry • mass media outlets (such as newspaper, radio and television) 	<ul style="list-style-type: none"> • increased risk of acute sickness • increased risk of chronic sickness • aesthetically less pleasing

EMERGENCY DISINFECTION OF THE DISTRIBUTION SYSTEM WATER MAINS

The purpose of this standard is to define the minimum requirements for the disinfection of water mains, including the preparation of water mains, application of chlorine, and sampling and testing for the presence of coliform bacteria.

Disinfection is performed in accordance with AWWA Standard C651. Three forms of chlorine may be used for disinfection including liquid chlorine, liquid sodium hypochlorite and calcium hypochlorite, which is available in granular form or tablets. Three disinfection methods are included in the standard, as summarized in the below table. The utility may select the most appropriate method for each specific application.

Disinfection does not occur until the chlorine demands are met. Chlorine demand is caused by the pipe's interior surface, pipe joint lubricant, rust from connected mains, construction dirt and the water used to fill the main.

The use of too much chlorine can be a problem. Not only may the taste and odor be unacceptable, but the production of trihalomethanes such as chloroform and chlorate from calcium hypochlorite makes the disinfected water unusable in the distribution system.

DISINFECTION METHODS FOR WATER MAINS

Disinfection Method	Chlorine Dose	Contact Time	Application	Advantages	Disadvantages
Tablet	25 mg/L	24 to 48 hours	Mains up to 24 inches. Not to be used on solvent-welded plastic or screwed joint steel pipe.	Requires no special equipment.	No preliminary flushing. Main kept clean & dry during construction. Chlorine conc. not uniform. Tablets may dissolve slowly under stagnant conditions.
Continuous Feed	10 mg/L free chlorine residual after contact time	24 hours	General	Uniform chlorine concentration.	
Slug	50 - 100 mg/L	3 hours	Large diameter mains, long mains.	Reduced volume of heavily chlorinated water to be disposed.	

Source: AWWA (1992)

WELLS

SHOCK CHLORINATION PROCEDURE FOR DRILLED WELLS

A modified procedure is also provided for large diameter wells.

Caution: If your well is low yielding or tends to pump any silt or sand, you must be very careful using the following procedure because over pumping may damage the well. When pumping out the chlorinated solution, monitor the water discharge for sediment.

Follow these steps to shock chlorinate your well.

Step 1 Store sufficient water to meet needs for 8 to 48 hours.

Step 2 Pump the recommended amount of water (see Table 1, Amount of Chlorine Required to Obtain a Chlorine Concentration of 1000 PPM) into clean storage. A clean galvanized stock tank or pickup truck box lined with a 4 mil thick plastic sheet is suitable. The recommended amount of water to use is twice the volume of water present in the well casing. To measure how much water is in the casing, subtract the non-pumping water level from the total depth of the well. See the example below.

Metric Example

The drilling record indicates the casing is 61 meters in length and the non-pumping ("static") water level is 30.5 meters ft. The length of casing that is holding water in it is 30.5 m. (61-30.5). If your casing is 150 mm. in diameter you need to pump 35.3 litres of water for every meter of water in the casing, into your storage container. Since you have 30.5 m. of water in the casing, you will pump 35.3 L/m. x 30.5 m. = 1077 litres. of water into storage.

Using Table 1, calculate how much water you need to pump into clean storage.

Casing diameter _____ needs _____ L/m. x _____ m. = _____ L.

Imperial Example

Table 1 Amount of Chlorine Required to Obtain a Chlorine Concentration of 1000 PPM-Metric

Casing diameter	Volume of water needed per 1 meter of water	5 ¼% domestic chlorine bleach - litres needed per 1 meter of water	12% industrial sodium hypochlorite - litres needed per 1 meter of water	70% high test hypochlorite - dry weight ¹ per 1 meter of water
mm	(L)	(L)	(L)	(g)
100	15.7	0.30	0.13	102.0
150	35.3	0.67	0.29	229.5
200	62.8	1.2	0.52	408.0
600	565.4	10.8	4.7	3672.4
900	1272.3	24.2	10.6	8262.9

The drilling record indicates the casing is 200 ft. in length and the non-pumping ("static") water level is 100 ft. The length of casing that is holding water in it is 100 ft. (200-100). If your casing is 6 in. in diameter you need to pump 2.4 gal. of water for

every foot of water in the casing, into your storage container. Since you have 100 ft. of water in the casing, you will pump 2.4 gal./ft. x 100 ft. = 240 gal. of water into storage.

Using Table 2, calculate how much water you need to pump into clean storage.

Casing diameter _____ needs _____ gal./ft. x _____ ft. = _____ gal.

Table 2 Amount of Chlorine Required to Obtain a Chlorine Concentration of 1000 PPM-Imperial

Casing Diameter	Volume of water needed per 1 foot of water	5 ¼% domestic chlorine bleach - litres needed per 1 foot of water	12% industrial sodium hypochlorite - litres needed per 1 foot of water	70% high test hypochlorite - dry weight ¹ per 1 foot or water
(in)	(gal Canadian)	(gal)	(gal)	(oz)
4	1.1	0.02	0.01	0.25
6	2.4	0.05	0.02	0.56
8	4.3	0.08	0.04	1.0
24	39.1	0.74	0.33	9.0
36	87.9	1.7	0.73	20.1

1 Since a dry chemical is being used, it needs to be mixed with water to form a chlorine solution before placing it in the well.

12% industrial sodium hypochlorite and 70% high test hypochlorite are available from:

- Water treatment suppliers **Figure 1 Siphoning Chlorine Solution**
- Drilling contractor (s)
- Swimming pool maintenance suppliers
- Dairy equipment suppliers
- Some hardware stores.

Caution: Chlorine is corrosive and can even be deadly. If your well is located in a pit, you must make sure there is proper ventilation during the chlorination procedure. Well pits are no longer legal to construct. Use a drilling contractor who has the proper equipment and experience to do the job safely.

Step 3 Calculate the amount of chlorine that is required, as shown in Table 1 and Table 2. Mix the chlorine with the previously measured water to obtain a 1000 ppm chlorine solution.

CALCULATING AMOUNT OF CHLORINE METRIC EXAMPLE

If your casing is 150 mm. and you are using 12% industrial sodium hypochlorite, you will require .29 litres per m of water in the casing. If you have 30.5 m. of water in the casing, you will use 0.29 litres x 30.5 m. = 8.85 litres of 12% chlorine.

Using Table 1, calculate the amount of chlorine you will need for your well.

Casing diameter _____ Chlorine strength _____ Gallons needed per 1 m. of water _____ x _____ m. of water in casing = _____ litres of chlorine.

CALCULATING AMOUNT OF CHLORINE IMPERIAL EXAMPLE

If your casing is 6 in. and you are using 12% industrial sodium hypochlorite, you will require .02 gal per ft. of water in the casing.

If you have 100 ft. of water in the casing, you will use 0.02 gal x 100 ft. = 2.0 gal of 12% chlorine.

Using Table 2, calculate the amount of chlorine you will need for your well.

Casing diameter _____ Chlorine strength _____ Gallons needed per 1 ft. of water _____ x _____ ft. of water in casing = _____ gal of chlorine.

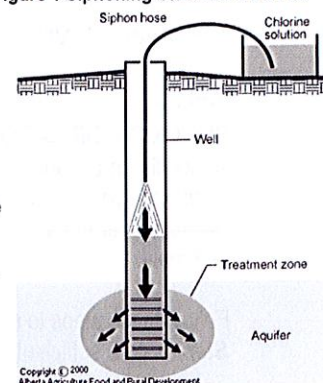
Step 4 Siphon this solution into the well (see Figure 1, Siphoning Chlorine Solution).

Step 5 Leave the chlorine solution in the well and distribution system for 8 to 48 hours. The longer the contact time, the better the results.

Step 6 Open an outside tap and allow the water to run until the chlorine odor is greatly reduced. Make sure to direct the water away from sensitive plants or landscaping.

Step 7 Flush the chlorine solution from the well and piping.

Figure 1 Siphoning Chlorine Solution



If you have an old well that has not been routinely chlorinated, consider hiring a drilling contractor to thoroughly clean the well prior to chlorinating. Any floating debris needs to be removed from the well and the casing scrubbed or hosed to disturb the sludge buildup.

PROCEDURE FOR LARGE DIAMETER WELLS

Due to the large volume of water in many bored wells the above procedure can be impractical. A more practical way to shock chlorinate a bored well is to mix the recommended amount of chlorine right in the well. The chlorinated water is used to force some of the chlorine solution into the formation around the well. Follow these steps to shock chlorinate a large diameter bored well.

Step 1 Pump 200 gal. (1000 L) of water into a clean storage tank at the well head.

Step 2 Mix 20 L of 5 1/4% domestic chlorine bleach (or 8 L of 12% bleach or 1.4 kg of 70% calcium hypochlorite) into the 200 gal. of stored water. This mixture will be used later in Step 4.

Step 3 Using Table 2 (or Table 1 for metric calculations) calculate the amount of chlorine you require per foot of water in the casing and add directly into the well. (Note that the 70% hypochlorite powder needs to be dissolved in water to form a solution before placing in the well.)

Step 4 Siphon the 200 gal. bleach and water solution prepared in Steps 1 and 2 into the well.

Step 5 Complete the procedure as described in Steps 5 to 7 for drilled wells.

Parts of this section are reprinted from *Shock Chlorination and Control of Iron Bacteria* and are available on-line at <http://www.agric.gov.ab.ca/agdex/700/16d12.html#shock> with the permission of Alberta Agriculture, Food & Rural Development.

ALTERNATE SOURCE OF WATER

WATER SUPPLY

Besides boiling the water during an emergency situation, people need to be informed about alternatives such as water bottlers and household filters, which they can use if necessary. This will lessen the problems of the people, if they don't want to boil the water. The municipal authorities need to keep a list of agencies

EMERGENCY WATER SOURCE

During an emergency situation, if the outbreak persists for a long period, boiling the water or looking for bottled water may frustrate people. It may become necessary to create a central water supply area from where people can get clean safe water. People may find it more convenient to haul treated water home from a central supply area rather than boiling large quantities for drinking and food preparation. There are also small package treatment plants that could be used during such situations. Another option for a central supply is to haul treated water from a nearby community. Cash flow has to be available to meet the situation, so funds need to be reserved. A list of bottled water distributors shall be included.

SIGNING

DISCUSSED: _____ May 19, 2020

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COUNCIL: _____ May 19, 2020

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