

Fletcher Creek Improvement District Emergency Response Plan

Prepared: November, 2012. **Revised: June, 2023**

(Revisions should be done yearly and whenever situations with the water system change.)

The purpose of this Emergency Response Plan is to list only those actions which must be carried out immediately to deal with specific emergency situations. Longer term solutions or activities can be developed and carried out after the initial actions have been completed and in consultation with experts, as necessary.

CONTACT LIST

Organization	Position	Name	Number
	Trustee	Alan Davidson	250-777-1604
	Chair	Neil Kelly	778-738-1202
	Trustee	Heather Kelly	778-738-1202
	Trustee	John Command	250-551-8448
	Secretary/Treasurer	Donna Butt	250-353-8985
FCID Contractor	Maintenance Person	Paul Stannard	250-505-3644
terior Health	Environmental Health Officer	Jennifer Marcotte	1-855-751-2005 250-365-4327
	Infrastructure Programs team Leader – small water systems	Rob Birtles	250-770-5540 Ext 31283
	Health Protection Manager	(On-call)	1-855-851-4184
	Medical Health Officer – on call	(After hours and Emergency)	1-866-457-5648
	Public Health Engineer	Marianne Crowe	1-855-743-3550
	Engineering Direct	Public Health Engineer	1-855-743-3550
Emergency Management BC	Emergency Contact Centre NOTE: Call this number first to activate the RDCK Emergency Operations Centre. Call if more than the normal turbidity in spring or during heavy rains is observed, i.e. unusually muddy water, and there is a concern of possible slides upstream. (Environmental emergencies		1-800-663-3456

	include hazardous or toxic spills, discharges, emissions, as well as dyke and dam failures, debris flows and floods)		
RDCK	Emergency Program Manager	Chris Johnson	250-352-1530
Other Emergency Contacts	Fire Department		911
	Southeast Fire Centre, Castlegar		1-250-365-4040
	Wildfire Management Headquarters, Victoria		1-250-387-5965
	Secretary to the Comptroller of Water Rights	Chris McMillan	1-250-387-6355
	Minister of Forests, Lands & Natural Resource Operations, Water Utility Regulation Section, Water Management Branch		1-250-387-6355
	Minister of Community, Sport, and Cultural Development		1-800-663-7867
	Ministry of Environment – Spill Reporting		1-800-663-3456
	RAPP (Report all Poachers and Polluters		1-877-952-7277
	Department of Fisheries and Oceans Canada	Observe, Record, & Report Line (ORR)	1-800-465-4336
	BC Hydro		1-888-769-3766
	Fortis BC		1-866-436-7847
	Bottled Water Supplier - Nelson	Water Pure & Simple	250-354-1899
	Bulk Water Hauler - Local	Brenton Industries (Sean Brenton cell)	250-353-7653 250-551-4058
Local Contractors	Plumber	Craig Tucker	250-353-7743
	Small Excavator near surface work	Brenton Industries (Sean Brenton cell) Ian McKinnon	250-353-7653 250-551-4058 250-353-7720
	Large Excavator deeper work	Stan Baker Sean Brenton Daryl Dertell Bryan MacMillan Ian McKinnon	250-353-2267 250-353-7653 250-551-4058 250-353-2971 250-353-2453 250-353-7720

Note:

Emergency contact names and phone numbers are posted on the FCID website. Contact information is posted on the reverse side of the Boil Water Notice on The Community Bulletin Board.

LOCATION OF:

Emergency Response Plan – a copy with all Board members, the Secretary/Treasurer and the Environmental Health Officer

Keys to intake building – all Trustees have keys

Intake building – drive west on Thompson road, take the first left and drive 150 m to the driveway into the building on the right side.

Map – all Trustees have a map. As well, one is posted inside the intake building.

Tools (set of 3 turn keys) - there are 2 larger keys at the intake building and 1 smaller curbside key which can be accessed by contacting any of the Trustees of the Maintenance Person.

“Unfit Drinking water” sign is attached. Post if the contamination is from a substance that is not addressed by the standing Boil Water Notice, i.e., chemicals or any substances other than bacteria.

POSSIBLE EMERGENCY SITUATIONS and ACTION PLANS

Note: An ongoing Boil Water Notice is in place and has been communicated to all residents, thereby alerting them to the presence of unacceptable levels of coliforms and episode instances of E. Coli. Interior Health does not require ongoing monitoring as water quality is known to be unacceptable.

Contamination – Dead animal in the creek above the intake

Actions:

- Remove dead animal from the creek.
- If risk assessment for contamination is high, i.e., the animal is large and the body is located within 100 feet of the intake building, immediately notify the Board Chair who will ask the Secretary Treasurer to contact all users and post Do Not Consume notice on the community bulletin board, alerting them of the situation and need to abide by the Boil Water Notice requirements, and that their water will be shut off until further notice.
- If risk assessment for contamination is high, then stop water flowing from the creek into the tanks, drain and disinfect tanks and lines.
- Notify users when the system is back to normal operation and remind them to strictly observe the Boil Water Notice.

Contamination – Sample results show high numbers of faecal coliforms or E. Coli

Note: Unacceptable levels of faecal coliforms and E. Coli have been found on occasion in the system. This condition has resulted in a standing Boil Water Notice.

Actions:

- Notify the Environmental Health Officer upon receipt of water sample data that includes unacceptable faecal coliforms or E. Coli.

Contamination – Accidental or deliberate (In this case, the creek itself is contaminated and the identity of the contaminant may not immediately be known.)

Actions:

- Immediately contact the Secretary-Treasurer to contact all users (by email and/or telephone) to inform them of the known or unknown contamination, and warn them that the water is unfit for drinking, cooking or consuming in any way and advise them of the action that FCID will be undertaking.
- Post detailed information on the community bulletin board to reinforce the information they received.
- Notify Interior Health (see Contacts list above).
- Distribute and post the Do Not Consume or Do Not Use notice, as directed by Interior Health.
- Take action as recommended by Interior Health and contact any other agencies they suggest.
- Once the contaminant has been identified, clean the tanks and lines as recommended. It may be necessary to use the emergency backup pump in the lake until the creek water is considered free of contamination.
- Notify users when the system is back to normal operation and clearance has been obtained from Interior Health. Remind users that the Boil Water Notice remains in effect.

Contamination -- Back-siphonage - In this case, the water distribution system may be contaminated with bacteria or a chemical.

Actions:

- Remove source of back-siphonage (e.g., open end of a hose left immersed in a trough, pond, hot tub, etc.)
- Stop water flowing from the creek into the tanks, drain tanks, and disinfect tanks and lines using a 12-hour disinfection procedure. If the contaminant is a chemical, avoid disinfecting with bleach to prevent the formation of dangerous compounds.
- Notify Interior Health (see Contacts list above). If chemical contamination is suspected, use the emergency backup pumping system once the tanks and lines have been cleaned as recommended by Interior Health.
- Immediately notify the Secretary-Treasurer to email all users and phone those without email. Inform users of the possible bacterial or chemical contamination and warn them that the water is unfit for drinking or cooking or consuming in any way. Distribute and post the Do Not Consume or Do Not Use notice (see attached) as directed by Interior Health. Inform users that water will be shut off for 12 hours to disinfect or decontaminate

the system and samples will be tested for bacteria and chemical contaminants. Explain the importance of installing anti-siphon valves on all outside faucets.

- Send a water sample in for bacterial and chemical testing and inform users of the results as soon as they are available. Undertake a second test if warranted, e.g., if the contamination was substantive. Remind users that the Boil Water Notice is always in effect.

Contamination and Physical Hazards - *Wildfire in the watershed.*

Wildfires can result in a variety of impacts to water systems that can cause contamination and drinking water related hazards, including loss of power, physical damage to infrastructure, loss or contamination of the water source. Interior Health guidance for managing a wildfire emergency in a watershed are attached as Appendix A.

Actions:

- In the case of possible wildfire reaching the watershed and infrastructure, undertake all preventative actions deemed appropriate.
- In the case of wildfire in the watershed, contact Interior Health immediately (see Contacts list above).
- Contact BC Government Wildfire Branch Wildfire Management Headquarters in Victoria, and/or Southeast Fire Centre in Castlegar.
- Follow guidance provided by Interior Health (as per Appendix A and supplementary communications).
- Obtain additional advice from other contacts listed above as to the nature and dangers of the contaminants/hazards and what action is required.
- If advised that the water has become unsafe, notify the Secretary-Treasurer to immediately contact all users to inform them of the situation and warn that the water is unfit for drinking, cooking or consuming in any way. Advise them of the action that FCID will be undertaking.
- Distribute and post the Do Not Consume or Do Not Use notice (see attached) as directed by Interior Health.
- Take action as recommended by above contacts.
- Notify users when the system is back to normal operation and clearance has been obtained from Interior Health. Remind users that the Boil Water Notice remains in effect.

Loss of Source – intake damaged or plugged, creek dried up. May result from slides above the intake, or debris after heavy rains or runoff.

Actions:

- Determine if the problem can be easily rectified (e.g. by clearing debris from intake). If yes, no further action is required. If the problem cannot be easily and quickly rectified, the emergency backup pump will have to be used.
- Notify the Secretary-Treasurer to contact all users by email and/or telephone, and post detailed information on the community bulletin board. Inform them of the situation and that the emergency backup pumping system will be used to fill the tanks with water from the lake and to use water sparingly until further notice. The need for limiting water usage will also be specified.
- Start the emergency backup pump in the lake to fill the tanks.
- Monitor tank levels and use another pump to fill the tanks directly from the creek, if necessary.
- Return to creek water as soon as intake is cleared or repaired or creek water levels rise.
- Notify users when the system is back to normal operation and remind them that the Boil Water Notice remains in effect.

Slide above intake – debris in the creek, very high turbidity. May result from heavy rains, logging, wildfires, etc. and can result in higher levels of coliform bacteria.

Actions:

- Notify the Secretary-Treasurer to contact all users by email and/or telephone, and to post information on the bulletin board. Inform users of the situation and that the emergency backup pumping system will be used to fill the tanks with water from the lake and to use water sparingly until further notice.
- Contact Interior Health (see Contacts list above). Post Do not Consume Notice if directed to do so.
- Contact BC Ministry of Environment (see Contacts list above).
- Send in water samples for testing.
- Start the emergency backup pump in the lake to fill the tanks.
- Return to creek water as soon as turbidity/debris abates, water samples indicate coliform levels are back to normal and approval has been obtained from Interior Health.
- Notify users when the system is back to normal operation and remind them that the Boil Water Notice remains in effect.

Broken water line

Actions:

- Consult the map to locate shut-off valve above the break and shut water off at that point.
- Notify Secretary-Treasurer to contact all users affected by the water shut off and inform them of the situation.
- Notify Interior Health (see Contacts list above. No construction permit is required to repair leaks, but Interior Health keeps a record of these events.)
- Call maintenance people if required, to dig down to the break.

- Repair the break.
- Turn water on and check for leaks before back filling.
- Flush out any lines that may have been contaminated with soil.
- Notify users of problem resolution.

FCID water users becoming ill -

Actions: for calls received **only occasionally** from users who wonder if their symptoms may be due to a water-borne pathogen.

- The caller should be advised to use their own judgment as to whether they should seek medical attention or not. Do not offer advice in that regard.
- Ask if they have been boiling water and using it as per FCID instructions.
- The call details must be documented and kept on file.
- Contact Interior Health (see Contacts list above).
- Follow up with a call a few days later to inquire as to how they are feeling.

Actions: for calls received from **several people** within the **same time frame**:

- Advise the callers to seek immediate medical attention. Document the details of all calls.
- Contact Interior Health (see Contacts list above).
- Alert local physicians if Interior Health advises to do so.
- Immediately notify the Secretary-Treasurer to contact all user's to inform them of the possible contamination and warn them that the water is unfit for drinking, cooking or consuming in any way until further notice. Distribute the appropriate water notice, as directed by Interior Health (attached) to all households and post on the community bulletin board. Also inform users that water will be shut off until further notice to disinfect the system. If necessary, the emergency backup pumping system will be used to fill the tanks with water from the lake. While on the emergency backup system, users are asked to use water sparingly.
- Send samples in for testing.
- Stop water flowing from the creek into the tanks, drain tanks, and disinfect tanks and lines using a 12 hour disinfection procedure.
- Start the emergency backup pump in the lake to fill the tanks and purge the lines.
- When samples are negative and approval has been obtained from Interior Health, return to using creek water.
- Notify users when the system is back to normal operation and remind them that the Boil Water Notice remains in effect.

DO NOT CONSUME WATER NOTICE

Fletcher Creek Improvement District

has issued this advisory effective _____ due to:

Due to the above-mentioned recent events in the area and to avoid health risks, we are advising water users to use bottled water or an alternate source of water for drinking, making ice, washing dishes, brushing teeth, and food preparation until further notice. Boiling the water will not make it safe!

****It is okay to use this water for bathing and flushing toilets but please conserve water as best you can.**

If alternate water sources are used, the water must be from Interior Health approved sources only. The water in your hot water tank may also be unsafe. Please consult a qualified plumber before draining your hot water tank.

For more information contact the maintenance man, a Board Trustee, or the Secretary-Treasurer. (See contact information)

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS - Please share this information with all the other people who drink this water, especially those in rental units and all visitors.

DO NOT USE WATER NOTICE

Fletcher Creek Improvement District
has issued this advisory effective _____ due to:

All water users are advised to use bottled water or an alternate source of water for drinking, making ice, washing dishes, brushing teeth, bathing, and food preparation until further notice.

Boiling the water will not make it safe. If alternate water sources are used, the water must be from an Interior Health approved sources only. The water in your hot water tank may also be unsafe. Please consult a qualified plumber before draining your hot water tank.

For more information contact the maintenance man, a Board Trustee, or the Secretary-Treasurer. (See contact information)

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS -

Please share this information with all the other people who drink this water, especially those in rental units and all visitors.

APPENDIX A. Interior Health Guidance Re: Information for Water Suppliers Impacted by Wildfires (and Other Hazards)

Wildfires can result in a variety of impacts to water systems that can cause contamination and drinking water related hazards. These include:

- **The loss of power, which in turn can lead to:**
- Backflow of water into the system – this can occur when there is a loss of pressure in the system causing contaminated water to be pulled back into the system through cracks in the piping or cross connections with non-potable water sources.
- Loss of water treatment equipment functionality – this can allow untreated water to enter the distribution system and be consumed.
- Water sitting in the distribution system and becoming stagnant – this can allow microorganisms in the distribution system to multiply, which can pose a health risk and lead to taste and odour problems.
- **Physical damage to water system components and equipment.**
- **Impacts to your water source**, including the loss of source water or contamination from fire retardant.

Returning to Normal Operations

If there is any doubt about the state of the system or the safety of the drinking water, the water supplier must issue a Boil Water Notice (BWN) immediately and contact an Environmental Health Officer (EHO).

- When safe to do so, inspect the water system components to ensure they have not been damaged and are working properly. Check to make sure all water treatment infrastructure (if any) is working properly.
- Begin performing maintenance procedures to repair the water system. The specific actions required will depend on factors including likelihood of contaminants entering the system, if the system was abandoned, and for how long:
 - Flush the distribution system – this involves discharging water from the pipes through hydrants, standpipes or other discharge points. It allows stagnant water, debris and other contaminants to exit the system. It should be done prior to disinfecting the system in order to reduce the amount of chlorine required.
 - Disinfect the system – this involves introducing chlorine into all or part of the water system to kill any harmful microorganisms that may be present. The distribution system can be disinfected by introducing chlorine into the water mains to achieve an initial concentration of 25 mg/L (ppm). Allow this solution to stand in the pipes for 24 hours, at which time there should be at least 10 mg/L of chlorine left. A test kit is required to measure residuals. The pipes can then be flushed to remove the remaining chlorine. See table below for the amount of chlorine required to produce 25 mg/L in 30.5 meters (100 feet) of pipe. This method follows the continuous-feed method described by the American Water Works Association (AWWA).

Chlorine required to produce 25 mg/L concentration in 100ft (30.5m) of water main by diameter (as described in AWWA Standard C651-05)

Pipe Diameter		100% Chlorine		1% Chlorine Solution*	
<i>Inches</i>	<i>Millimetres</i>	<i>Pounds</i>	<i>Grams</i>	<i>Gallons</i>	<i>Liters</i>
4	100	0.013	5.9	0.16	0.6
6	150	0.030	13.6	0.36	1.4
8	200	0.054	24.5	0.65	2.5
10	250	0.085	38.6	1.02	3.9
12	300	0.120	54.4	1.44	5.4
16	400	0.217	98.4	2.60	9.8

*Please note that commonly used sources of chlorine are household bleach (5% chlorine) and industrial strength bleach (12-15% chlorine). These will need to be diluted to achieve a 1% chlorine solution.

- Verify water quality by taking two sets of bacteriological samples at least 24 hours apart.
- If contamination of a chemical nature is suspected, a higher level of public notification may need to be issued. This could include a Do Not Consume or a Do Not Use notification. Ideally, this should be done in consultation with an Environmental Health Officer or Medical Health Officer (for after hours emergencies).

Is there Damage to your Water System?

- When it is safe to do so, begin the process of trying to assess and inventory any damage to the system. Contact the EHO for additional consultation or help in assessing the system.
- Where it has been determined that work is required to repair the water system, a Construction Permit is usually required. These can be obtained through Engineering Direct at 1- 855-743-3550 or through engineeringdirect@interiorhealth.ca. There is more information on the Interior Health public website. In some circumstances, emergency repair work can be completed without a permit. To determine if this applies to your situation, contact the EHO prior to doing any work.
- In the event of extensive damage to the water system, including the loss of the water source or complete loss of the system, it may be necessary to obtain additional approvals. Please contact the EHO.
- Water suppliers are encouraged to consult with their insurance provider to determine if coverage is available.
- In some cases, it may be necessary to retain the services of a qualified person, such as an engineer or water system design professional, for help with assessing the state of the system.

Potential Impacts to Surface Water Sources

Surface water sources may experience some longer-term impacts as a result of wildfire activity. Wildfires can change the surrounding geology, which can lead to increased runoff. Surface water sources can also be impacted by fire retardants. Fire retardants used in BC are not toxic, they do, however, contain nutrients which can temporarily increase nitrogen concentrations and stimulate algae growth.

They may also cause aesthetic changes to the water, such as a salty taste. Water suppliers relying on a surface water source may wish to undertake additional testing to monitor for changes to their source water. Contact an EHO if you are unsure.

Additional Resources

Water System Flushing

Developing and Implementing a Distribution System Flushing Program (Free PDF) (2002). American Water Works Association. <https://www.awwa.org/publications/journal-awwa/abstract/articleid/14615.aspx>

Unidirectional Flushing: A Powerful Tool (Free PDF) (1999). American Water Works Association. <https://www.awwa.org/publications/journal-awwa/abstract/articleid/14075.aspx>

Water System Disinfection

AWWA Standard C651-14: Disinfecting Water Mains (2014). American Water Works Association. <https://www.awwa.org/store/productdetail.aspx?productId=45320336>

AWWA Standard C652-11: Disinfection of Water Storage Facilities (2011). American W <https://www.awwa.org/store/productdetail.aspx?productId=45320336>

Other Resources

Small Water Users Association of British Columbia – the association provides information to small water suppliers about assistance programs, local equipment suppliers, consulting engineers, and other issues related to small water systems.