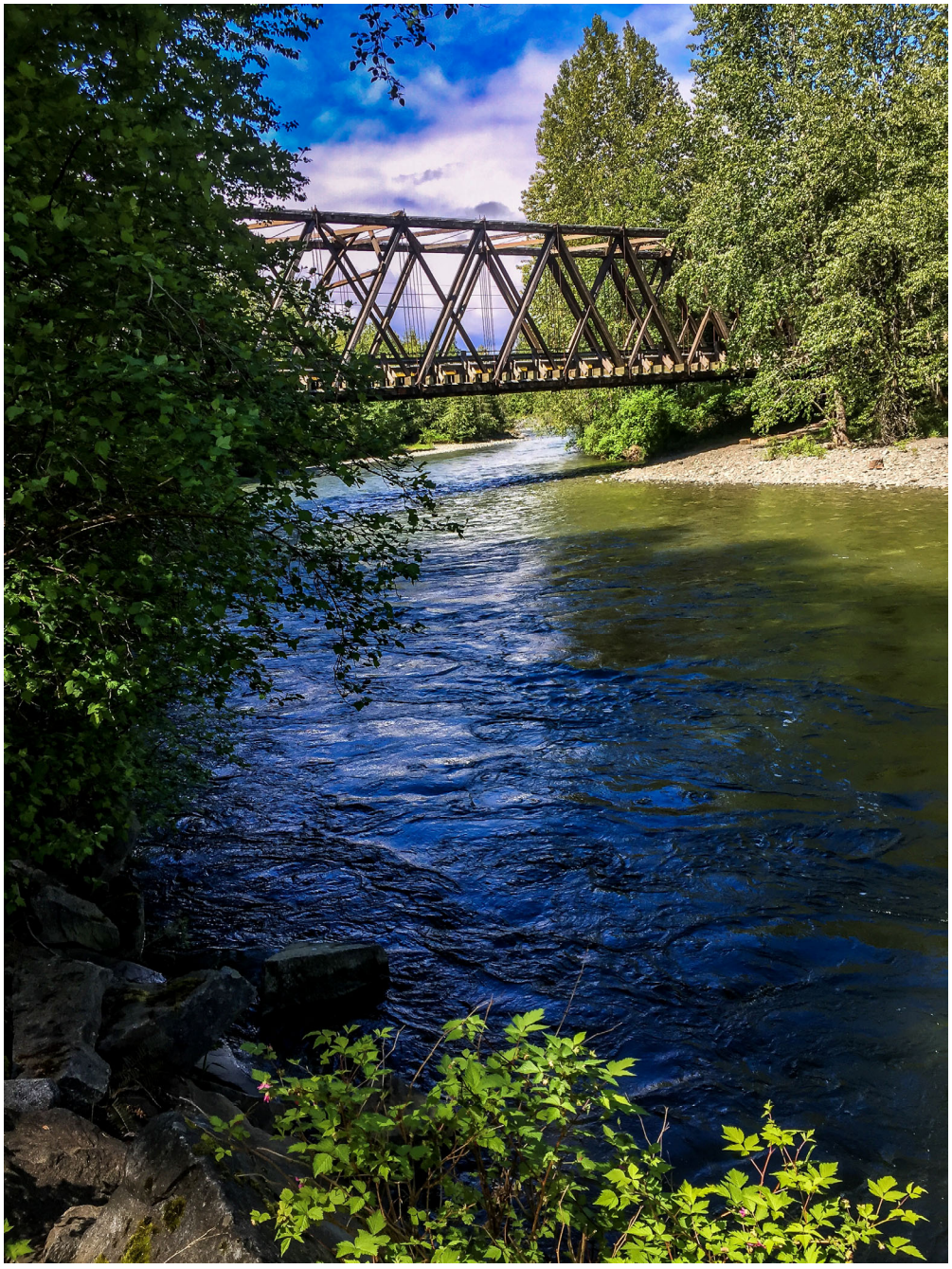
Comox Valley
REGIONAL DISTRICT

Black Creek-Oyster Bay Water System Emergency Response Plan



Update: November, 2023

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1. Loss of Power – BC Hydro Power Supply

The loss of BC Hydro power will automatically activate the power generator to provide electricity to the Comox Valley chlorination station. The water on call person will receive a page from the alarm monitoring company advising that there has been a power failure alarm and a genset run, power transfer alarm.

1.1 Respond to alarm and assess the situation.

1.2 Contact BC Hydro and notify them of the situation. Request an estimate of the duration of the power outage. BC Hydro 1-888-769-3766

1.3 Ensure that the generator is running properly.

1.4 Ensure that the chlorination equipment is operating properly.

1.5 Refuel standby generator if the outage is expected to last for an extended period

1.6 Once BC Hydro power is back in service check equipment and refuel the generator.

Genset

- Capacity is 80kw.
- Total run time with <u>full</u> fuel tank (120 gallons) is approximately 45 hours.
- Heaters are not on the generator supply.

In the event of freezing temperatures additional heat sources may be required within the chlorination building.

Stopping and starting of the booster pump may cause the ejector to vent chlorine solution causing a chlorine leak alarm.

- Staff will respond as per CVRD water services chlorine leak policy in the safety manual. (Section 2)

The regional district pump stations have uninterruptible power supplies that would maintain data logging and limited control in the event of a power failure.

In the event of an extended power failure:

- A backup portable generator could recharge the battery units in these stations.

2. Chlorine Leak at Oyster Bay Station Well #1, 4840 Regent Rd.

<u>Chlorine leaks require a response from CVRD waterworks personnel trained in chlorine cylinder leak repair.</u>

The chlorination station gas storage room is equipped with a chlorine gas scrubber.

The scrubber has the capacity to neutralize 2000 lbs. of liquid chlorine gas (under pressure).

In the event of a chlorine gas leak in this room, the scrubber will activate automatically and an alarm will be sent to the water on call person.

Leaks outside of the chlorine gas storage room would not activate an alarm from the chlorine leak sensors.

Details of leak assessment and repair are covered in the department safety manual.

2.1 Chlorine leak response

2.1.1 If waterworks personnel detect a chlorine leak during delivery:

Contact the manager of water services, or senior water technician, then additional water services staff will be called out to respond to the leak.

The manager will determine fire department and RCMP will be required for evacuation of the surrounding area.

Any additional emergency notification may be initiated at this time or determined by assessment of the leak.

2.1.2 If this leak requires additional assistance from the fire department or RCMP, the chlorination station cannot be used to meet with emergency response personnel due to chlorine gas exposure.

The meeting site is at the gate at the entrance to Well #1.

2.1.3 A repair plan will be determined after assessment by trained CVRD water services staff.

2.1.4 Leak repair will be completed by CVRD staff equipped with proper protective equipment. If needed, level "A" chemical suits are located at the waterworks shop at 299 Puntledge Ave. Additional technical support is available through the chlorine supplier: Brenntag Canada Emergency Contact phone 1-604-685-5036. Brenntag Canada emergency plan number is ERAP 2-0985.

After repairs have been completed, emergency response personnel will determine when the area is safe to allow anyone that has been evacuated to return to their home or workplace.

Emergency Contact phone 1-604-685-5036 for technical support available through the chlorine supplier: Brenntag Canada.

2.1.7 Any equipment used (Repair Kit) would need to be serviced and any repair materials restocked.

2.1.8 A leak of this nature would require a report to be filed with the WorkSafe BC outlining the cause and procedures followed.

2.1.9 A post incident investigation would need to be arranged to ensure the appropriate actions were followed. Any changes in procedure would be implemented.

3. Failure of Chlorination Equipment

The Oyster Bay chlorination station has a backup chlorine ejector and solution line. In the event of failure of one of the chlorine ejectors, the operator on call can switch to the backup ejector by opening and closing the appropriate valves.

The on-call water services personnel will receive a "Low Chorine Alarm" from the alarm monitoring service. The operator can close the main valve (in the station) on the system that is in need of repair.

It may be necessary to bypass the alarms (Low Chlorine residual, Booster fail) until repair is made and the equipment is returned to service.

3.1 In the event that the chlorination station is unable to function entirely

The reason for this would be a major component failure either due to fire or electrical overload or natural disaster.

3.1.1 The on-call person would be the first response to any of these events. If it is found that the system does not have the ability to chlorinate, the manager of water services shall be contacted immediately. The manager will decide if the public health authority will need to be advised of any potential contamination.

3.1.2 A boil water notice (see Communications Procedure page 10) may need to be issued if there has been any unchlorinated water that has entered the distribution system.

3.1.3 Turn off the well pumps. This will stop unchlorinated water from entering the water system.

3.1.4 The repair of failed equipment or an alternate chlorination method needs to be implemented.

3.1.5 Bacterial water samples and free chlorine residuals should be taken throughout the distribution area.

3.1.6 Assess the volume of unchlorinated water entering this system. This can be back flushed to the chlorination station. Test the chlorine residual at the flushout outside the chlorination station. Test chlorine levels at all stations to ensure levels are adequate.

3.1.7 When repairs are made and sufficient sampling has been done to prove 0.6 mg/l chlorine in the supply system and the main valves in the pipe galleries can be opened to allow water back into the distribution system.

3.1.8 Subject to approval of VIHA the boil water notice may be rescinded.
(See Communications Procedure page 11.)

4. Bacterial Contamination of the Distribution System

The Black Creek/Oyster Bay water system is sampled bi- weekly. Consult with VIHA regarding E. coli presence in water samples. If there is E. coli detected in any of these samples proceed as follows:

- Test for free chlorine levels present at sample site. Determine that adequate levels are present.
- Flush the sample tap and ensure there is no local contamination of the site. Resample the site that had the presence of Total Coliform.
- Results of these samples will show any indication of growth in 24 hours. Complete test takes 48 hours. If there is any indication of Total Coliform in further samples, flushing of the affected area and resampling will be required.
- Continue flushing and sampling until no presence of Total Coliform is indicated.

4.1 E. coli Contamination or High Turbidity Levels

4.1.1 Contact the Vancouver Island Health Authority. Any water samples that indicate the presence of **E. coli** or **High Turbidity Levels** could require a boil water notice (see Communications Procedure page 10) to the users of the Black Creek/Oyster Bay water system.

4.1.2 Evaluate operational adjustments designed to reduce turbidity levels (i.e. temporarily isolate the water system from the source (river) and supply water from reservoirs only, etc).

4.1.3 Commence daily turbidity sampling and testing at all reservoirs to measure turbidity levels in the system, as well as the incoming turbidity from the source. (If turbidity results acceptable to VIHA, and not trending higher, then daily testing required only on week-days. Terminate daily testing after turbidity drops below 3 NTU.)

4.1.4 Determine the area affected and flush the system until acceptable chlorine or turbidity levels are found. Resample throughout the area.

4.1.5 Evaluate a communication strategy. It may be necessary to notify specific sites by hand delivering or faxing notices. i.e. hospitals, long-term care facilities and schools etc. Key communication issues – boil water notice, higher chlorine taste, water colour, etc.

4.1.6 Once the cause of the problem has been determined and corrected, three consecutive negative tests must be received. Consult with VIHA to determine when the boil water notice may be rescinded. (See Communications Procedure page 11.)

4.1.7 Evaluate need for a communications strategy.

5. Contamination of the Water Supply

In the event that there is contamination or suspected contamination of the water system occurs, including suspected reservoir intrusion:

5.1 Contact the manager of water services or other supervisor so they can advise the Vancouver Island Health Authority and Corporate Communications Team that contamination of the water supply has occurred.

5.2 Assess the source and the extent of the contamination within the water system. It may also be necessary to issue a boil water notice or other restrictive use notices such as water use restriction notice and/or do not consume the water notice to the users of the water system through the media. Additional advisories may be required after determining the cause of contamination.

5.3 If the contamination is from the source, turn off the well pumps and close the valves to isolate the water system from contamination. If the distribution system is contaminated, isolate the affected area. If the contamination is determined to be hydrocarbons leaking into the water source, the risk to the water supply must be assessed as soon as possible. This assessment will determine the appropriate response.

5.4 Water staff, in consultation with the Vancouver Island Health Authority, will need to determine a sampling strategy for hydrocarbons and assess the threat to the water supply.

5.5 If the source is contaminated, contact the **Emergency Management BC (EMBC) Emergency Coordination Centre (ECC)** and advise them of the nature of the emergency. **Phone 1-800-663-3456.**

5.6 In all cases sampling and testing of the water will be needed to determine the extent of the contamination.

5.7 It may also be necessary to flush the system if it is determined that there is contamination of the water supply.

5.8 After flushing, resample and determine that there is no contaminated water in the system. When the Vancouver Island Health Authority is satisfied that the water meets the drinking water standards, the system can be put back into normal operation.

5.9 Issue a removal of boil water notice a removal of water use restriction notice (and/or a removal of do not consume the water notice through the media

5.10 Clean up equipment and restock any supplies used.

5.11 Contact all agencies involved to ensure that proper controls are in place to prevent future events and that the procedures for controlling contamination are adequate.

6. Loss of Water Supply, Including Earthquakes and Drought

The following assumes the loss of water supply is due to source failure, drought, and/or considerable component/equipment failure that disrupts service to a large portion of the distribution area, effecting numerous customers, for an extended period of time. Regular work procedures are to be followed for loss of supply due to minor main breaks, equipment failures, or other brief service disruptions. Specific circumstances contributing to the loss of water supply (cause, extent of damage, areas affected, etc.) will dictate the appropriate response and may result in associated alarms and involvement from the alarm monitoring system.

6.1 Loss of a large supply main

6.1.1 Contact the manager of water services or supervisor and advise them of the nature of the emergency. The manager will determine which agencies will require notification.

6.1.2 Isolate the affected area. Depending on which water main is closed, this may create an alarm at one of the reservoirs due to loss of supply while filling.

6.1.3 It may be necessary to restrict water use through radio announcements and contact to the users of the water system.

6.1.4 Arrange to make the necessary repairs to the system.

6.1.5 Flush the system after repairs.

6.1.6 Ensure that there are adequate chlorine levels in the water prior to putting the supply main into service.

6.1.7 Remove any restrictive water advisories through the media.

6.1.8 Replace materials used for the repair.

6.2 Earthquake

The response to emergencies created by an earthquake would be dependant on the severity. It would be necessary to assess the nature of the damage to the water system. For this scenario it is assumed that this is a severe earthquake. It is also assumed that the earthquake has created multiple broken water mains and that the BCOB water system is losing water at a high rate. The objective is to preserve clean stored water for use as potable drinking water.

6.2.1 Contact the manager of water services or other supervisor and co-ordinate a response plan. Utilize available staff to perform the assessment of the infrastructure. Prioritize the work needed, based on damage to the system and supply options that may still be intact. Notify any agencies that would be affected by disruption of service. A boil water or restrictive water use notice may need to be issued through the media.

6.2.2 In the event that the supply system cannot fill the reservoirs, the water that they hold may be needed for an interim supply. This would be accomplished by closing the inlet (on those reservoirs that fill from the bottom) and the outlet valves. The distribution zones that are supplied by these reservoirs would immediately be put out of water.

6.2.3 **This is an extreme measure** and would be a last resort to hold some potable water for the Comox Valley water system.

6.2.4 The priority for repairs would be to first establish the supply system and chlorination station. Water hauling and bottled water would be needed to meet the domestic water requirements of the Comox Valley.

6.2.5 As repairs are made to the infrastructure, areas that had been out of water would be put back into service through standard testing and bacterial certification processes.

6.2.6 As supply and water quality are assured, boil water and restrictive use advisories would be removed in consultation with VIHA.

6.2.7 Any materials that were used for repair would need to be restocked.

6.3 Drought

Drought is seasonal and predictable. Constant monitoring of the Provincial Drought Rating, local snowpack and groundwater table levels and local conditions and forecasts are essential to be able to plan and prepare for seasonal drought. Operators are to monitor groundwater well and river infiltration gallery levels using on-line telemetry that is connected to the automation and controls system (SCADA) that is monitored continuously. The BCOB water system has 3 wells and a river infiltration gallery where the pumped flow can be increased or decreased based on water table level. The wells can produce water independently or be linked together in order to have less impact in a specific zone. This design enables flexibility and robustness to the available source water.

6.3.1 Manager of water services or designate will work to implement Black Creek-Oyster Bay Water Conservation Bylaw No 519 and recommend moving through the effective water restriction stages to achieve water use reduction- WILL ESCALATE BASED ON DROUGHT SEVERITY, SYSTEM NEEDS AND PUBLIC RESPONSE

6.3.2 Manager of water services or designate will work with communications team to effectively notify the public of the situation - WILL ESCALATE BASED ON DROUGHT SEVERITY, SYSTEM NEEDS AND PUBLIC RESPONSE

6.3.3 Water Operations staff can monitor individual users consumption and start to communicate to those users if further conservation measures are needed

6.3.4 Water operations staff to monitor well levels (static and re-charged) and adjust setpoints accordingly to minimize the impact on water table. This is done through SCADA which monitors and gives continuous access to the programming and monitoring of the entire water system both remotely and on-site.

6.3.5 Water Operations staff to monitor and notify Manager of water services or designate, who will contact and work with Island Health officials if drought conditions could result in any concern with raw water quality or the ability to disinfect.

7. Communications Procedures

The Manager of Water Services will alert the Communications Department about any water emergencies. A decision on the level of response will be made in conjunction with the department and the GM of Engineering and/or the Senior Manager of Water and Wastewater.

Communications Contacts:

Christianne Wile, Manager of Operational Communications	250-334-6066
Jennifer Steel, Manager of Corporate Communications	250-334-6063
James Warren, GM of Corporate Services	250-334-6007

The Crisis Communications Plan applies to incidents that occur within the CVRD and for which the CVRD has direct jurisdictional authority. The CVRD will assume lead responsibility for all emergency communications in those jurisdictional areas, and for those components of infrastructure and services for which the CVRD has direct accountability. This could include some or all of the following actions:

- Sending out an emergency message via the Connect Rocket emergency management system
- Posting an emergency banner on the website
- Advising Water Committee and CVRD Board Chair
- Advising CVRD staff
- Preparing a press release and distributing to Comox Valley Media
- Posting updates to social media
- Posting updates to the website
- Drafting FAQs and Key Messages
- Responding to social media inquiries

Schedule A
Emergency Contact List

Agencies	Emergency Numbers
Comox Fire Department	911
Courtenay Fire Department	911
Black Creek/Oyster Bay Fire Department	911
Courtenay Fire Department	911
R.C.M.P.	911
Brenntag Canada Emergency (Office 1-800-661-	1-604-685-5036
North Island Hospital Comox Valley	250-331-5900
Campbell River Hospital	1-250-287-7111
Vancouver Island Health Authority	
Environmental Health Officer: Ella Derby ella.derby@v	Office: 250-331-8607 Fax: 250-331-8596
Environmental Health Officer: Nancy Clements Nancy.Clements@v	Office: 250-923-1343 Fax: 250-850-2110
Public Health Engineer: Darrell Belanger	Office: 250-331-8518 Fax: 250-331-8596
Medical Health Officer (MHO): Dr. Charmaine Enns	Office: 250-331-8591 Fax: 250-331-8513
After Hour Vancouver Island Health Authority MHO Emergency Contact	1-800-204-6166
Emergency Management BC (EMBC) 24/7 Emergency Coordination Centre (ECC)	1-800-663-3456
Ministry of Environment (MOE)	1-800-663-3456
Center for Disease Control (CDC)	1-604-661-7033
Bureau Veritas – Analytical Services	250-338-7786
BC Hydro Vancouver Island Control	1-250-701-4611
BC Hydro Report and Outage	1-888-769-3766
WorkSafe BC - Worksite Emergency	1-888-621-7233
Prices Alarms – Emergency Response Centre	1-888-817-8415
CVRD - Manager Emergency Programs – Howie Siemens	Office: 250-334-2002 Cell: Redacted
CVRD Emergency Planning Coordinator – Cari McIntyre	Office: 250-334-6096 Cell: Redacted
City of Courtenay	250-334-4441

City of Courtenay Public Works Yard	250-338-1525
Town of Comox	250-339-2202
Town of Comox Public Works Yard	250-339-2485
K'ómoks First Nation	250-339-4545
CVRD Staff Contacts:	Cell
Mike Herschmiller, Manager of Water Services	Redacted
Steve Prunkle, Senior Waterworks Operator	Redacted
Steve Russell, Waterworks Operator	Redacted
Gavin Waterfield, Lead Hand, Water Transmission & Distribution	Redacted
Eric Cox, Waterworks Operator	Redacted
Kerry Bird, Waterworks Operator	Redacted
Paul Turney, Waterworks Operator/Water Transmission & Distribution	Redacted
Kaleb Leskiw, Waterworks Operator	Redacted
Dan Fredlund, Water Utilities Technician	Redacted
Patrick Roesch, Water Operator	Redacted
Jarrett Morka, Senior Operator - Water Treatment	Redacted
Kate Norkum, Waterworks Operator	Redacted
Tyler Robertson, Waterworks Operator	Redacted
Dan McGill, Waterworks Operator	Redacted
Keith McKay, Waterworks Operator	Redacted
Sonya Jenssen, Waterworks Operator	Redacted

SEE NEXT PAGE FOR DETAILED INFORMATION CONTACT NUMBERS

Schedule B
Emergency Notification Procedure

In the event of an emergency the following persons shall be contacted and advised immediately of the situation:

City of Courtenay	
CAO	Geoff Garbutt: 250-334-4441 ext. 7240
Director	Kate O'Connell 250-334-4441 ext. 7238 cell: 250-218-8733
Director of Public Works Services	Kyle Shaw: 250-338-1525 cell: 250-218-4804
Waterworks Foreman	Burton Brand: 250-338-1525 cell: 250-218-315
After hours & holidays	Protect Answering Service: 250-334-2947
Town of Comox	
CAO	Jordan Wall: 250-331-6469 cell: Redacted
Public Works Superintendent	Craig Perry: 250-331-6412 cell: Redacted
Municipal Engineer	Shelly Ashfield: 250-331-6409 cell: Redacted
Chief Water Operator	Joel Louke 250-339-5410 works yard cell: Redacted
After hours & holidays	250-218-5959
Comox Valley Regional District	
Chief Administrative Officer	Russell Dyson: 250-334- 6055 / cell: Redacted
Deputy CAO	James Warren: 250-334-6007 / cell: Redacted
GM of Engineering Services	Marc Rutten: 250-334-6080 / cell: Redacted
Sr. Manager Water/Waste Water Services	Kris La Rose: 250-334-6083 / cell: Redacted
Manager of Water Services	Mike Herschmiller: 250-334-6023 / cell: Redacted
After hours & holidays	1-877-999-2285 answering service
K'ómoks First Nation	
Band Emergency Liaison	Jenny Millar: 250-339-4545 x105 / cell: Redacted
Comox Valley Water Committee	
Chair	Director Wendy Morin 250-338-1385 / cell: Redacted
Puntledge Hatchery	
Hatchery On-call person	250-703-0907
Prices Alarm	1-888-817-8417
BC Hydro	
Vancouver Island Control	BC Hydro Emergency: 250-850-0540
Fraser Valley Office	1-604-455-1715
Vancouver Island Health Authority	
Health Officer	See previous pages

An emergency is defined as anything that would/could cause illness to any resident within the Comox Valley Water System supply area, a malfunction of a major component that would/could interrupt water service or contamination/disruption of the source supply.

Emergency Contact List