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# **BLACK CREEK OYSTER BAY WATER SYSTEM EMERGENCY RESPONSE PLAN**

**February, 2009**

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**1. Loss of Power - BC Hydro Power Supply**

Well #1 and 2 would not be able to function without power. There is no backup power to any of the stations. The waterworks on call person will receive a page from the alarm monitoring company advising that there has been a power failure alarm.

- 1.1 Respond to alarm and assess the situation. **Watch for downed power lines**
- 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 Turn off the pumps. This will prevent them from starting without all phases working.
- 1.4 Check the power phase indicator switch on the panel at well#1. This will tell if all 3 power phases are out.
- 1.5 Inspect the main power lines and pole fuses to ensure that there is no damage to the main supply to the stations.
- 1.6 Check the system pressure. Note the last reservoir level on the chart recorder. With this information you can project how long the water supply will last.
- 1.7 If this outage is expected to be a long time, contact a supervisor and advise them of the situation. The supervisor will determine which agencies need to be contacted.
- 1.8 If this outage is expected to last longer than the reservoir can supply water it may be necessary to contact the fire dept. to advise them that the system may run out of water. If the system is going to run out of water, the users should be notified through the media. (See Appendix C)
- 1.9 Once BC Hydropower is back on, turn on pumps and check all equipment.

**Caution**

Stopping and starting of the chlorine booster pump may cause the chlorine ejector to vent chlorine solution, causing a chlorine leak alarm. Staff will respond as per CVRD Water Dept. chlorine leak policy in the safety manual.

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

The Oyster Bay chlorination station gas room has four, 150# cylinders of chlorine. Two of these cylinders are on line and two are spare. The gas room has a chlorine leak detector. This detector will send an alarm at less than 1 ppm of chlorine in the air. The alarm will be sent to the waterworks personnel on call. Chlorine leaks require a response from Regional District Waterworks personnel trained in cylinder leak repair. These procedures are covered in the water dept. safety manual.

**Chlorine leak response**

- 2.1 Contact the Manager of Water Services, or Senior Water Technician, then additional Water Dept. staff will be called out to respond to the leak. The Manager will determine if Fire Dept. 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.
- 2.2 If this leak requires additional assistance from the Fire Dept. 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.
- 2.3 A repair plan will be determined after assessment by trained CVRD Water Dept. staff.
- 2.4 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
- 2.5 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.
- 2.8 Any equipment used (Repair Kit) would need to be serviced and any repair materials re-stocked.
- 2.9 A leak of this nature would require a report to be filed with the WorkSafe BC outlining the cause and procedures followed.
- 2.10 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.

- 3.1 The on call Water personnel will receive a “Low Chlorine 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.
- 3.2 It may be necessary to bypass the alarms (Low Chlorine residual, Booster fail) until repair is made and the equipment is returned to service.

#### **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.

- 3.3 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 Vancouver Island Health Authority needs to be advised of any contamination.
- 3.4 A “Boil Water” advisory (see Appendix A) may need to be issued if there has been any un-chlorinated water that has entered the distribution system.
- 3.5 Turn off the well pumps. This will stop un-chlorinated water from entering the water system.
- 3.6 The repair of failed equipment or an alternate chlorination method needs to be implemented.
- 3.7 Bacterial water samples and free chlorine residuals should be taken throughout the distribution area.
- 3.8 Assess the volume of un-chlorinated water entering this system. This can be back flushed to the chlorination station. Test the chlorine residual at the chlorination station. Test chlorine levels throughout the distribution system to ensure levels are adequate.
- 3.9 When repairs are made and sufficient sampling has been done to prove 0.6 ppm chlorine in the supply system and the main valves in the pipe galleries can be opened to allow water back into the distribution system.
- 3.10 The “Boil water Advisory” may be rescinded (see Appendix B)

#### 4. Bacterial Contamination of the Distribution System

The Black Creek/Oyster Bay water system is sampled bi-weekly. If there is **Total Coliform** detected in any of these samples proceed as follows.

- 4.1 Flush the sample tap and ensure there is no local contamination of the site. Re-sample the site that had the presence of Total Coliform.
- 4.2 Results of these samples will show any indication of growth in 24 hrs. Complete test takes 48 hrs. If there is any indication of Total Coliform in further samples, flushing of the affected area and re-sampling will be required.

#### Fecal Coliform Contamination or High Turbidity Levels

- 4.3 Contact the Vancouver Island Health Authority. Any water samples that indicate the presence of **Fecal Coliform** or **High Turbidity Levels** could require a "Boil Water Advisory" (see Appendix A) to the users of the Black Creek/Oyster Bay water system.
- 4.4 Determine the area affected and flush the system until acceptable chlorine or turbidity levels are found. Re-sample throughout the area.
- 4.5 It may be necessary to notify specific sites by hand delivering or faxing notices. i.e. hospitals, long-term care facilities and schools etc.
- 4.7 Once the cause of the problem has been determined and corrected, three consecutive tests must be taken and sent to VIHA. VIHA will determine when the boil water advisory may be rescinded. (see Appendix B)

## 5. Contamination of the water supply

In the event that the contamination or suspected contamination of the water system is in a localized area, including suspected reservoir intrusion, notify the agencies having jurisdiction, determine the source of contamination, isolate the contaminated area, flush and sample to prove potable water.

- 5.1 Contact the Manager of Water Services or other supervisor and advise them that contamination has occurred. At this time Vancouver Island Health Authority should be notified of the contamination of the water supply. It may also be necessary to issue a boil water or other restrictive use advisory to the users of the water system through the media.
- 5.2 Turn off the well that may be contaminated.
- 5.3 Assess the source of contamination and determine the potential threat to the water system.
- 5.4 It may be necessary to contact the **Provincial Emergency Plan (PEP) Phone 1-800-663-3456**.
- 5.5 Sampling of the water may be needed to determine the extent of the contamination.
- 5.6 It may also be necessary to flush the system if it is determined that there is contamination of the water supply.
- 5.7 After flushing, re-sample 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.
- 5.8 Remove any water use advisory through the media
- 5.11 Clean up equipment and re-stock any supplies used.
- 5.12 Meet with 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**

The response to the loss of supply is dependant on the cause and extent of the damage to the source or supply system.

**Loss of a large supply main**

- 6.1 Turn off all wells to stop filling the reservoirs. 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.
- 6.2 Contact the Manager or Supervisor and advise them of the nature of the emergency. The Manager will determine which agencies will require notification. Depending on the system demand, it may be necessary to restrict water use through radio announcements and contact to the users of the water system.
- 6.3 Arrange to make the necessary repairs to the system
- 6.4 Flush the system after repairs.
- 6.5 Ensure that there are adequate chlorine levels in the water prior to putting the supply main into service.
- 6.6 Remove any restrictive water advisory through the media.
- 6.7 Replace materials used for the repair.

**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. The actions required in this case would be scaled down to suit the extent of damage to the water system. The objective is to preserve clean stored water for use as potable drinking water. It is also assumed that the earthquake has created multiple broken water mains and that the water system is losing water at a high rate.

- 6.8 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 advisory may need to be issued through the media.



- 6.9 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 supply zones that are supplied by these reservoirs would immediately be put out of water. **This is an extreme measure** and would be a last resort to hold some potable water for the Water System.
- 6.10 The priority for repairs would be to first establish the supply system and chlorination station. Water hauling and bottled water may be needed to meet the domestic water requirements of the water system.
- 6.11 As repairs are made to the infrastructure, areas that had been out of water would be put back into service through the standard testing and bacterial certification process.
- 6.12 As supply and water quality are assured, boil water and restrictive use advisories would be removed.
- 6.13 Any materials that were used for repair would need to be re-stocked

**APPENDIX A**

**BOIL WATER ADVISORY**

Press release from: The Comox Valley Regional District

Date: \_\_\_\_\_

<b>To:</b>	<b>Tel</b>	<b>Fax</b>
The Eagle 97.3 FM	250-703-0199	
Jet 98.9 FM	250-334-2421	
Global TV	250-383-2435	
A-channel Victoria	250-381-2484	

Due to       (Insert cause)       the Comox Valley Regional District and the Vancouver Island Health Authority are issuing a boil water advisory. All users of the Black Creek Oyster Bay Water System are advised to boil their drinking water for 2 minutes at a rolling boil. The Comox Valley Regional District is working to correct this condition and will advise users when this problem is resolved. If you have any questions regarding this notice please call the water department at 250-334-6000. Thank you for your co-operation.

**APPENDIX B**

**REMOVAL OF BOIL WATER ADVISORY**

Press release from: The Comox Valley Regional District

Date: \_\_\_\_\_

<b>To:</b>	<b>Tel</b>	<b>Fax</b>
The Eagle 97.3 FM	250-703-0199	
Jet 98.9 FM	250-334-2421	
Global TV	250-383-2435	
A-channel Victoria	250-381-2484	

Effective \_\_\_\_\_ (Date) \_\_\_\_\_ the Comox Valley Regional District and the Vancouver Island Health Authority are removing the Boil Water Advisory for the users of the Black Creek Oyster Bay Water System. If you have any questions regarding this notice please call the water department of the Comox Valley Regional District at 250-334-6000. Thank you for your co-operation.

**APPENDIX C  
WATER USE RESTRICTION ADVISORY**

Press release from: The Comox Valley Regional District

Date: \_\_\_\_\_

<b>To:</b>	<b>Tel</b>	<b>Fax</b>
The Eagle 97.3 FM	250-703-0199	
Jet 98.9 FM	250-334-2421	
Global TV	250-383-2435	
A-channel Victoria	250-381-2484	

A disruption of the Black Creek Oyster Bay water supply system is preventing the Comox Valley Regional District from supplying adequate volumes of drinking water. To ensure enough water for fire fighting and domestic needs, the regional district is imposing water use restrictions. The Comox Valley Regional District is requesting that sprinkling and all non-essential water use stop immediately. Thank you for your co-operation. For further information please contact the water department of the Comox Valley Regional District at 250-334-6000.

**APPENDIX D**

**REMOVAL OF WATER USE RESTRICTION ADVISORY**

Press release from: The Comox Valley Regional District

Date: \_\_\_\_\_

<b>To:</b>	<b>Tel</b>	<b>Fax</b>
The Eagle 97.3 FM	250-703-0199	
Jet 98.9 FM	250-334-2421	
Global TV	250-383-2435	
A-channel Victoria	250-381-2484	

Effective \_\_\_\_\_ the Comox Valley Regional District has cancelled the sprinkling ban and restrictions on water use for the users of the Black Creek Oyster Bay Water System. Thank you for your co-operation.

For further information please contact the water department of the Comox Valley Regional District at 250-334-6000.

**Emergency Contact List**

<b>Agencies</b>	<b>Emergency Numbers</b>
Comox Volunteer Fire Department	911
Courtenay Volunteer Fire Department	911
Black Creek/Oyster Bay Volunteer Fire Department	911
Courtenay Fire Department	911
R.C.M.P.	911
St. Joseph's Hospital	250-339-2242
Brenntag Canada Emergency (Office 1-800-661-1830)	1-604-685-5036
Provincial Emergency Plan (PEP)	1-800-663-3456
Campbell River Hospital	1-250-287-7111
Vancouver Island Health Authority (Local 250.287.2818)	1-800-204-6166
Center for Disease Control (CDC)	1-604-661-7033
North Island Labs	250-338-7786
BC Hydro Vancouver Island Control	1-250-701-4611
BC Hydro Loss of Power	1-888-769-3766
W.C.B.	1-866-922-4357
Priority Security Alarm Monitoring	1-866-371-7375
Comox Valley Regional District	250-334-6000
City of Courtenay	250-334-4441
City of Courtenay Works Yard	250-338-1525
Town of Comox	250-339-2202
Town of Comox Works Yard	250-339-2485
<b>CVRD Staff Contacts:</b>	<b>Cell</b>
Kerry Mayo, Manager of Water Services	250-218-9699
Dennis Cassin, Senior Water Technician	250-218-3207
Shane Wilkie, Water Technician	250-207-0294
Gord Murduff, Water Technician	250-207-0304
Steve Russell, Water Technician	250-207-0307
Eric Cox, Water Technician	250-207-0297
Jesse Humphreys, Water Technician	250-207-0295