REMOVING WELL PITS

The purpose of this brochure is to provide information on regulatory requirements and best practices about well pits, why well pits are generally unsanitary and how well pits can be removed.

WHY ARE WELLS LOCATED IN PITS?

Historically, well pits were commonly used to protect water line connections from freezing by placing them underground below the frost line. A well pit is basically a large opening, excavated around the top 1.5 to 2.5 m of the well, that is lined with concrete, metal or wood. The well casing is cut off just above the base of the pit. (see Figures 1 and 2).

FIGURE 1  Well pit with wooden cribbing

FIGURE 2  Well pit with metal cribbing

WHY SHOULD WELL PITS BE REMOVED?

Well pits are generally unsanitary and are often vulnerable to flooding, which can cause surface water carrying debris, bacteria, pesticides, fertilizers or oil products to contaminate your drinking water supply (see Figure 3). Mice, rodents, frogs and insects can also enter the well pit and fall into the well.

In addition to the water contamination hazard, anyone entering a well pit without proper safety gear may risk asphyxiation due to the lack of oxygen and/or the presence of other gases such as carbon dioxide. Methane, an inflammable gas, can also accumulate in the bottom of a pit and cause an explosion.

RESTRICTIONS FOR WELL PITS FOR WATER SUPPLY WELLS

Section 36 of the Groundwater Protection Regulation (Regulation) prohibits well pits to be constructed around new water supply wells or existing water supply wells that do not have a well pit. When an existing water supply well in a pit is altered, the Regulation requires that the well pit be removed or upgraded to meet the new standards (e.g., designed by a professional). An altered well is one that has undergone any of the following: changing the diameter, depth or screen assembly; installing a surface seal (in a well that did not have one); and hydrofracturing to enhance groundwater supply.

A well pit is only allowed if the design and construction of the well pit is done by a professional with competency in hydrogeology or geotechnical engineering. The Regulation further requires the professional to prepare as built drawings of the well pit and submit the drawings to the comptroller within 90 days after construction of the well pit.
WHO CAN REMOVE A WELL PIT?

The Water Sustainability Act requires that a person altering a well, including removing a well pit, must be a registered well driller or a registered well pump installer, or be supervised by a professional.

Installation or repair work on the well pump must be done by a registered well pump installer. See the end of this brochure for a link to the online registers of well drillers and pump installers in British Columbia.

Any worker in a well pit must also follow WorkSafeBC rules for confined space entry and have the appropriate training, experience and equipment.

FIGURE 3 Water and debris in well pit

HOW CAN A WELL PIT BE REMOVED?

A well driller or well pump installer with confined space entry training must be hired to do this work. Each well pit may be unique and should be assessed. In some instances it may be best to replace the well due to its location, age and condition. Typically, the general procedure for removing a well pit is as follows:

1. Turn off the power to the pump before any work begins. Disconnect electrical wiring and associated piping and remove the pump from the well.

2. Remove the well pit cribbing using a backhoe or other appropriate equipment (see Figure 4). Any work involving an open excavation must comply with WorkSafeBC regulations related to excavation and construction safety.

3. Check the type and condition of the well casing. If the casing is metal remove any corroded sections and extend the well casing to at least 0.3 m (1 ft) above the finished ground level (see Figure 5) by threading or welding a metal casing extension to the existing well casing. If the existing casing is PVC, solvent weld the PVC casing extension to the existing casing. In areas where snow accumulates, a stick-up height of 0.6 to 0.9 m (2 ft to 3 ft) is considered a more appropriate height. Alternatively, use a rigid coupler to join the existing well casing to the casing extension. Ensure all new casing joints are watertight. Protect PVC casings from damage caused by impact and sunlight causing material breakdown.

4. Install a pitless adapter (see Figure 6) onto the new extended casing to provide a sealed waterline entry at a depth that will protect water lines from freezing. The pitless adaptor should be constructed of corrosion resistant materials such as brass (see Figure 7). Reinstall the pump and any associated piping, including a conduit for electrical works.

FIGURE 6 Pitless adapter installed below frost line

FIGURE 7 Pitless adapter
5. Install a surface seal to prevent surface contaminants from entering the well by either compacting bentonite around the extension joint and pitless adapter or placing a sono-tube around the upper casing and filling the sono-tube with a bentonite mixture. Fill the excavation hole with materials that have a lower permeability than the surrounding soil (i.e., do not fill the excavation with drain rock or pea gravel). Compact the fill. The well casing and extension must be kept vertical and inline at all times to ensure the pitless adapter is not damaged or dislodged. Grade the area around the top of the well in a manner that ensures adequate surface drainage away from the well and that the wellhead is protected from damage (see Figure 8).

6. Securely attach a vermin-proof and tamper-resistant well cap and, if required, a well cover to prevent the direct and/or unintended entry of persons and animals into the well (see Figure 8). Ensure the well cap (and well cover, if present), is sized to fit securely onto the well casing and should be vented to the atmosphere. Screen the open end of the air vent to prevent the entry of any insects or debris into the well. Use a check valve type of air vent to prevent flood water from entering the well in flood prone areas. Seal openings for electrical conduits entering the well using non-toxic material.

7. Disinfect the well and plumbing system before using the water. A procedure for simple chlorination can be found at [https://www2.gov.bc.ca/assets.gov/environment/air-land-water/water/water-wells/bc_gov_5402_water_well_disinfection_webbrochure.pdf](https://www2.gov.bc.ca/assets.gov/environment/air-land-water/water/water-wells/bc_gov_5402_water_well_disinfection_webbrochure.pdf). Collect a water sample and have it tested for bacteria, and other relevant parameters (see further information section), to ensure the well water is safe to drink. Look online or in the yellow pages of your telephone book under “Laboratories, Analytical” to find a laboratory to test your well water.

**FOR FURTHER INFORMATION**

For further information on whether the well water is safe to drink, contact your local Health Authority (look online or see listings in your local phone directory).

The registers of well drillers and pump installers can be found at [http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells/information-for-well-drillers-well-pump-installers](http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells/information-for-well-drillers-well-pump-installers).

For further information on WorkSafeBC requirements for confined spaces go to: [www2.worksafebc.com/Topics/ConfinedSpaces/Home.asp](http://www2.worksafebc.com/Topics/ConfinedSpaces/Home.asp).

For further information on the Groundwater Protection Regulation go to: [http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells](http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells).