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REPORTING REQUIREMENTS



DEFINITIONS



SPECIFIC REQUIREMENTS



## CHAPTER 1 | WHO CAN CONSTRUCT WATER SUPPLY WELLS?

### Well Construction

Any person who constructs or closes a water supply well must:

- be a qualified well driller (QWD), or
- work under the direct supervision of a QWD or a qualified professional QP (P.Eng or P.Geo) who has competency in the field of hydrogeology

This requirement does not apply to a person excavating a well or closing an excavated well not more than 15 m (50 ft) deep. However, the well construction and closing standards still apply.

Note:

- An owner may deactivate or disinfect his / her own well.
- A qualified well pump installer (QWPI) may deactivate a well.

### Examples of Water Supply Wells

- private domestic well
- community well
- irrigation well
- water bottling facility well
- open loop geothermal well

#### **“direct supervision” means:**

- Confirming in advance the supervisory relationship and methods of communication.
- The supervisor has considered the hydrogeological and drilling conditions likely to be encountered.
- The supervisor is aware of all actions taken by the supervised person.
- The supervisor has the ability to provide directions at appropriate stages throughout the activity, and does so.
- The supervisor is able to appraise the work.
- The supervisor is ultimately responsible for the work completed.

In some cases this may require physical presence by the supervising person on the site when work is in progress.

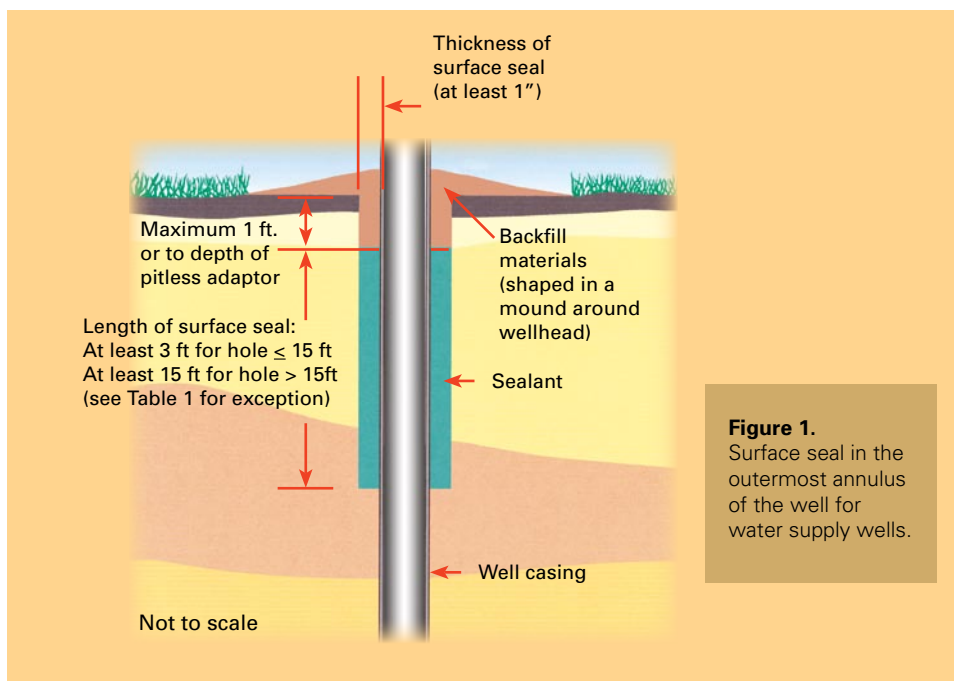


If you are not registered and need information on how to get registered, please refer to Tab 8 Registration.

## CHAPTER 2 | SURFACE SEALING OF WATER SUPPLY WELLS

### What is a surface seal?

A seal provides sanitary protection of the well water supply. A seal prevents contaminants from being transported to the aquifer along the length of the casing.



For drilled wells, the best way to install a surface seal is to drill first with an oversized casing to the appropriate depth and to backfill with an adequate sealant when the surface casing is pulled.

Note: If a temporary casing is used to install the surface seal, then the size and length of the temporary casing should be reported in the comments section of the well construction report.

## What can be used to seal a well?

### A proper sealant

A sealant is a non-toxic commercially available material or a mixture of materials including:

- bentonite clay
- bentonite clay and water mixture
- bentonite clay and sand and water mixture
- neat cement grout
- sand cement grout
- concrete grout
- A sealant can also be a material or a mixture of materials that has a lower permeability than the surrounding geologic formation to be sealed. This can include low permeability soils (clay, silt, till) encountered at or near the drilling site.

## TECHNICAL SPECIFICATIONS OF SURFACE SEALS

- The surface seal must be completed with an appropriate sealant and must meet the following minimum specifications:
  1. The length of the surface seal of a water supply well must be as specified in Table 1.
  2. The sealant must be at least 1 inch thick (including wall thickness of the surface casing if the casing is left in place).
  3. If the surface casing is installed with a drive shoe, or an annulus is created during installation, the surface casing must be removed and the seal completed between the production casing and the geologic formation.
  4. If a surface casing can not be removed to allow the seal to be completed between the remaining casing and the geologic formation:
    - the area directly around the surface casing must be excavated and sealed as in Figure 2 with 3 ft of sealant to completely seal the area.
    - the next outermost annulus must also be sealed as in Figure 2 to at least the length specified in Table 1 - Subject to this last requirement, any open annular space between multiple well casings must be effectively capped or sealed.

## SPECIFIC REQUIREMENTS APPLICABLE TO SURFACE SEALS FOR NEW WELLS

- The detailed requirements applicable to surface seals for new wells are presented in Table 1.

Table 1. Surface Sealing

| Class of well | Sub-class of well | Method of drilling | Orientation of well | Surface seal required? |                      | Minimum length of surface seal required (in feet) |                      |
|---------------|-------------------|--------------------|---------------------|------------------------|----------------------|---|----------------------|
|               |                   |                    |                     | Hole depth ≤ 15 feet   | Hole depth > 15 feet | Hole depth ≤ 15 feet                              | Hole depth > 15 feet |
| Water supply  | Domestic          | Drilling           | Vertical            | Required               | Required             | 3   | 15                   |
|               |                   | Drilling           | Horizontal          | Optional               | Required             | Not specified                                     | 15                   |
|               |                   | Driving            | Vertical            | Required               | Required             | 3   | 3                    |
|               |                   | Jetting            | Vertical            | Required               | Required             | 3   | 15                   |
|               |                   | Excavating         | Vertical            | Required               | Required             | 3   | 3                    |
|               | Non-Domestic      | Drilling           | Vertical            | Required               | Required             | 3   | 15                   |
|               |                   | Drilling           | Horizontal          | Required               | Required             | 3   | 15                   |
|               |                   | Driving            | Vertical            | Required               | Required             | 3   | 3                    |
|               |                   | Jetting            | Vertical            | Required               | Required             | 3   | 15                   |
|               |                   | Excavating         | Vertical            | Required               | Required             | 3   | 3                    |

### Explanation

**Optional :** Recommended but not required

- If it is not desirable to have the sealant exposed at the ground surface, the sealant may extend to within 1 foot of the ground surface to allow for 1 foot of backfill materials, but must still have a total length at least equal to that specified in the Table.
- The surface seal can start at the depth of the pitless adaptor but must still have a total length at least equal to that specified in the table.

### ADDITIONAL SPECIFICATION FOR DUG WELLS

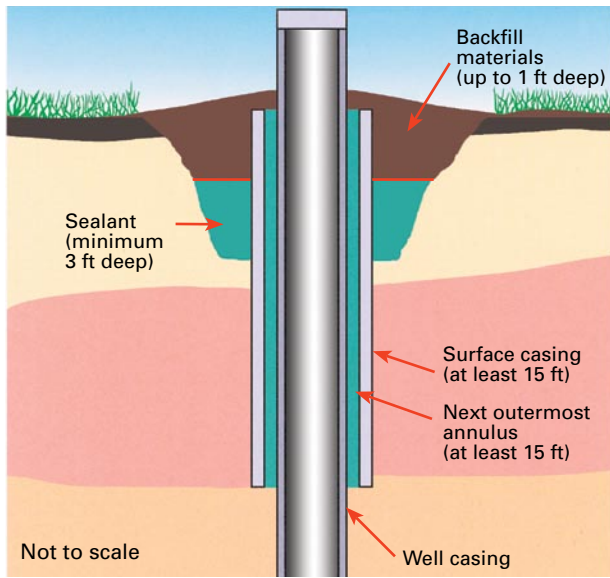
- All openings in the production casing must be made water tight.

### ADDITIONAL SPECIFICATION FOR BEDROCK WELLS

- If bedrock is encountered within 15 ft, the surface seal must be at least the length specified in Table 1 and extend to a depth of at least 3 ft into competent bedrock (Figure 3).

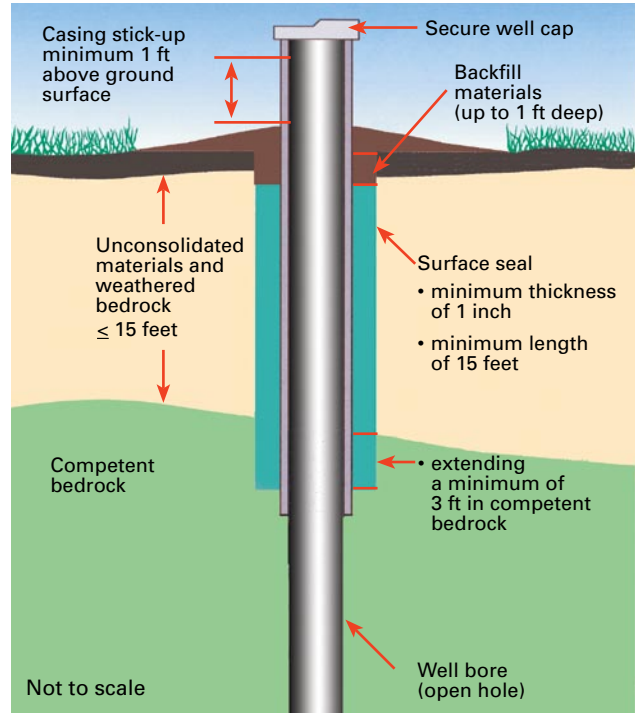
**Figure 2.**

Surface seal in the outermost annulus and next to the casing (when the surface casing is not removed), for typical well >15ft deep.



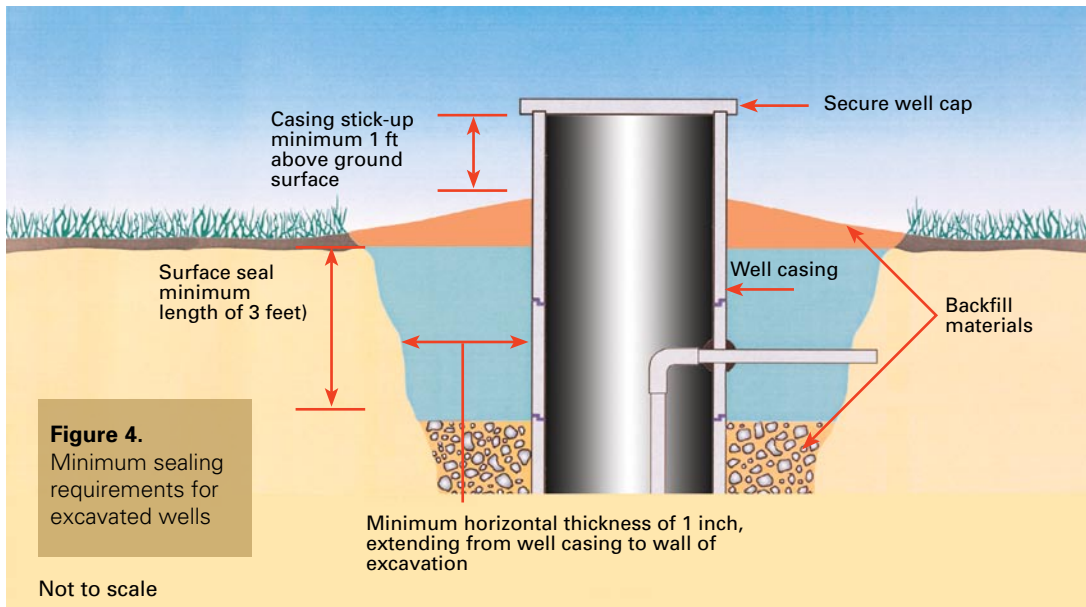
**Figure 3.**

Minimum sealing requirements for drilled wells greater than 15 feet in depth used for water supply where bedrock is at or within 15 feet of ground surface.



**Figure 4.**

Minimum sealing requirements for excavated wells



## MAINTENANCE OF SURFACE SEALS ON NEW WELLS

- QWPI who excavates part of the surface seal to install a pitless adaptor must restore the surface seal.
- Owners of new wells must ensure the integrity of the seal is maintained and that any annular space that may develop around the well is resealed by a QWD.

**REPORTING REQUIREMENTS**  
Information on the installation of surface seals (including diameter and length of temporary casing) must be entered in the Well Construction Report.

## ALTERATION OF EXISTING WELLS

If altering a well impairs the integrity of the existing surface seal or creates a visible annular space, the QWD must restore the seal and make sure the annular space is sealed.

Table 2. Roles and Responsibilities

| Driller   | Pump Installer   | Owner  |
|---|--|--|
| Complete a new well with an effective and permanent surface seal according to minimum specifications<br>If any alteration impairs seal integrity, ensure seal integrity is restored | Must ensure that integrity of seal is restored after working on a well | Ensure that the integrity of the surface seal is maintained and that any annular space that develops is resealed |

## CHAPTER 3 | WELLHEADS

### WELLHEADS

#### SPECIFIC REQUIREMENTS FOR PROTECTING WELLHEADS

- For new wells, the casing must extend at least 12 inches above ground or above the floor of the well sump, well pit or pump house.
- The immediate ground area around a new well, or an existing well altered after October 31, 2005, must be graded so water does not pond around the wellhead.
- New well sumps, well pits and pumphouses must be designed, constructed and maintained so as to convey water away from the wellhead.
- Thermoplastic casing must be completely protected from damage and material breakdown at and above the ground surface.

Note: Re-grading of the land surface to direct run-off water away from the well is a good practice and is recommended for any well.

## CHAPTER 4 | WELL CAPS AND WELL COVERS

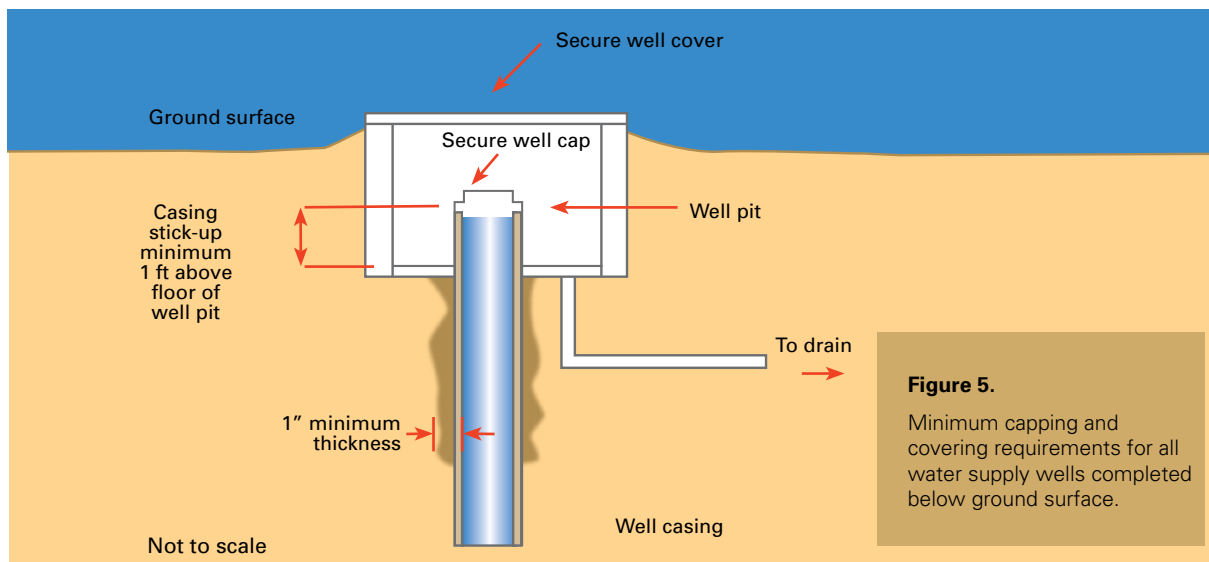
A well cap, or a well cap and cover, must be installed for all water supply wells (except horizontally drilled water supply wells). In the case of new wells, this must be done on completion of the drilling. Existing water supply wells must be capped by October 31, 2007.

### Definition

- Well cap – secure, vermin-proof cap or lid that prevents direct and unintended or unauthorized access to the interior of the production casing
- Well cover – secure, vermin-proof cover, lid or structure that prevents direct and unintended or unauthorized access to the well

### SPECIFIC REQUIREMENTS FOR WELL CAPS OR COVERS

Well covers must be used for all water supply wells that are completed below the ground surface as shown in Figure 5.



- A person who installs a well cap or well cover for a well must:
  - (a) use a commercially available or manufactured well cap or well cover, or
  - (b) fabricate a suitable and adequate well cap or well cover.
- A welded steel plate may be used as a well cap on a well with a steel casing that has yet to be put into use.
- If there is an annular space between well casings, the annulus must be capped or covered with a permanently installed water-tight well cap or well cover.

## CHAPTER 5 | FLOOD PROOFING OF COMMUNITY WELLS

### **Purpose:**

To specify flood proofing requirements for new community water supply wells.

Flood proofing protects the drinking water quality and the damage from floodwaters.

### **REQUIREMENTS**

If a new well is created for the purpose of supplying a water supply system, the owner must locate, complete, equip and maintain the well so as to protect the well or wellhead from physical damage due to flood debris, ice or erosion.

### **ORDERS FOR ASSESSMENTS OF WATER SUPPLY WELLS**

An engineer (MOE) may require the owner of a well (either new or existing) that is for the purpose of supplying a water supply system, to assess whether the well requires flood proofing. An engineer may also order the well owner to engage a

qualified professional to make this assessment.

After considering the assessments, the engineer can also order the owner to alter or maintain the well so that it meets the flood proofing requirements.

### **ORDERS FOR ASSESSMENTS OF WELLS NEAR WATER SUPPLY SYSTEMS**

An MOE professional hydrogeologist may also order an owner of a well (regardless of its type), that is in proximity to a water supply system well, and that may pose a threat of contaminants entering the water supply system well or the aquifer, to engage a qualified professional to assess the threat.

After considering the assessment, the engineer can also order the owner to alter or maintain the well so as to meet the flood proofing requirements of the Regulation, or to deactivate or close the well.

## CHAPTER 6 | WELL IDENTIFICATION

### Purpose:

To relate a well on the ground to the well record.

### REQUIREMENTS FOR IDENTIFICATION PLATE FOR WATER SUPPLY SYSTEM WELLS (NEW OR ALTERED WELLS)

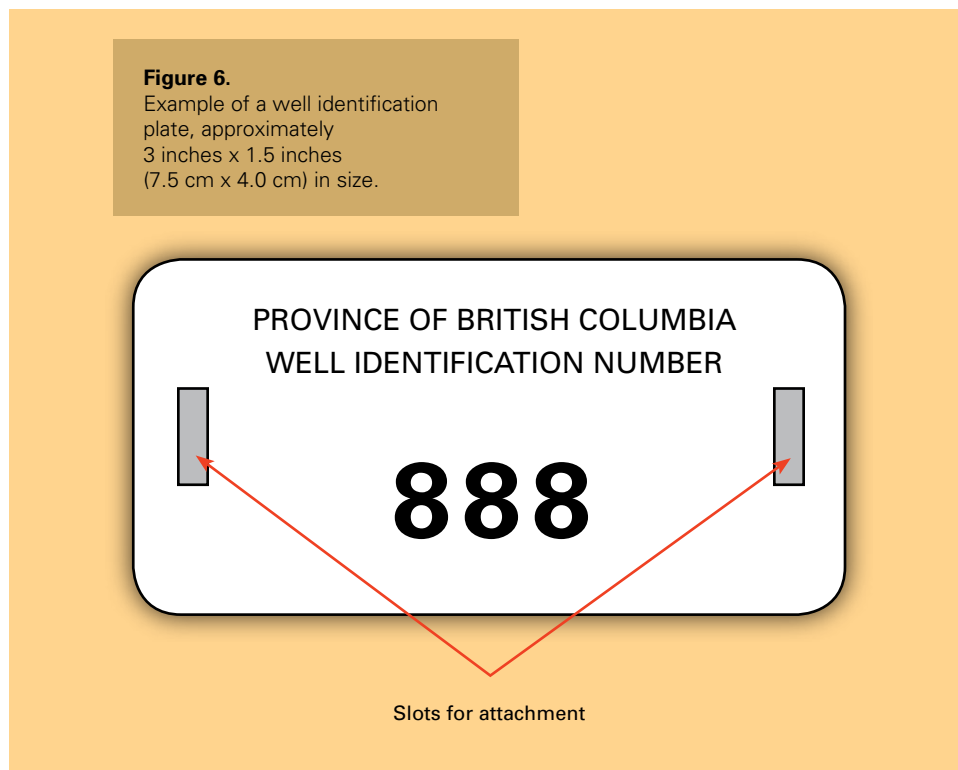
An identification plate must be attached to a water supply system well or wellhead for:

- new water supply system wells;
- existing water supply system wells being altered; and
- existing water supply system wells (by the well owner by October 31, 2006).

### WHERE TO GET WELL IDENTIFICATION PLATES?

Well identification plates are available without charge from the Ground Water Data Technician, Water Stewardship Division at 250 387-0014 or [Ground.Web@gov.bc.ca](mailto:Ground.Web@gov.bc.ca).

An example of a plate is shown on Figure 6.



### HOW TO ATTACH WELL ID PLATES?

The well identification plate can be attached to the well casing stick-up with a hose clamp. For excavated wells, the identification plate can be glued on with liquid nails (strong adhesive).

Note: Identification plates should not be welded to the casing, in case the well is closed and the plate has to be returned to MOE.

### MULTIPLE WELLS IN SINGLE PROTECTIVE CASING

If two or more wells that require a well identification plate are contained in a single protective casing, each well must have its own well identification plate.



Figure 7. Well head with ID plate.

#### REPORTING REQUIREMENTS FOR EXISTING WATER SUPPLY SYSTEM (COMMUNITY) WELLS

When an owner of an existing well used for supplying a water supply system attaches an identification plate, he or she must complete the form set out in Schedule 2, report the identification number and submit the form to the comptroller within 90 days.

#### REPORTING REQUIREMENTS FOR NEW WATER SUPPLY WELLS

The well identification number must be recorded in the Well Construction Report form and the completed report submitted to the comptroller within 90 days.

### PROTECTION AND MAINTENANCE OF WELL IDENTIFICATION PLATE

Well owners must maintain and safeguard the well identification plate from physical damage and ensure that the number remains plainly visible.

### MISSING OR DAMAGED WELL PLATES

Well owners must report to the comptroller any missing or

damaged well plates, and request a replacement within 30 days of discovering loss or damage.

### CLOSING

Persons closing a well must remove the well identification plate and return it to the comptroller within 90 days.

They must also complete the Well Closure Report form and submit it to the comptroller within 90 days.

### **Does a well identification plate need to be attached to a water supply well that has been drilled and immediately closed (e.g., dry well)?**

If a well is drilled to potentially be used for a water supply, but is deemed unsuitable or inadequate and is immediately closed before ever being used, the ministry will not require a well identification plate to be attached and removed.

However, a construction and closure report must be completed and submitted to the comptroller.

## CHAPTER 7 | TEMPORARY WELLS AND CHANGE OF USE OF A WELL

### Purpose:

To specify when temporary wells must be closed.

### REQUIREMENTS

If a temporary water supply well (e.g., well for a temporary camp or an exploratory well) remains open for more than 90 days, then the person responsible for the well or the well owner must ensure:

- A professional hydrogeologist provides written confirmation that the well may remain open for a further 90 days, without impairing the quality of ground water in the aquifer or posing a threat to human health or public safety, or
- The well is made permanent by meeting the minimum standards set out in the Regulation for that class of well, or
- The well is closed in accordance with the Regulation, after the 90-day extension.

The Regulation does not permit further extensions of 90 days.

### Change of use:

When the use of a well or purpose of a well is changed, the well owner must ensure that the well meets the minimum standards for that new use or purpose.

## CHAPTER 8 | WELL OPERATION

### Purpose:

To set out the rules regarding well operation, so as to prevent contamination of the well or significant adverse impacts to the aquifer.

### REQUIREMENTS

A person must not operate a well in a manner that causes or is likely to cause:

- an intrusion of salt water or contaminated water into an aquifer that the well draws from, or into any well that draws water from the aquifer, and/or
- a significant adverse impact on the quality of the ground water in that aquifer, or on existing uses of the ground water by any well drawing water from that aquifer.

## CHAPTER 9 | PROHIBITION ON INTRODUCING FOREIGN MATTER INTO A WELL

### Purpose:

To set out rules to prohibit the introduction of foreign materials into wells.

### REQUIREMENTS

A person must not introduce or allow to be introduced into a well any of the following

- Refuse,
- Carcasses,
- Human or animal waste,
- Pesticides or fertilizers,
- Material, natural or otherwise, from construction or demolition,
- Flood debris and flood waters,
- Contaminants in an amount or manner that might cause a significant adverse impact on the quality of the ground water or on the existing uses made of the ground water from the well.

### ENGINEER'S ORDER TO REMEDiate OR MITIGATE

An MOE professional hydrogeologist may order a person to stop introducing deleterious substances that impact the well and the groundwater.

If the engineer cannot ascertain who introduced the substances, the engineer may make the order against the owner of the well or the owner of the land.

### GOVERNMENT ACTION AT THE EXPENSE OF THE PERSON TO WHOM AN ORDER IS ISSUED

If a person to whom an order is issued fails to comply, and the comptroller or regional water manager considers that the failure may result in harm or damage to ground water, the comptroller or regional water manager can authorize the government or another person to take actions to comply with the order, at the expense of the person to whom the order is made.

## CHAPTER 10 | WELL DEACTIVATION

Objective of deactivating a well: To ensure that the well does not compromise the sanitary integrity of the aquifer or pose a safety risk.

### Difference between deactivation and closure:

- Deactivation: take the well temporarily out of service
- Closure: take the well permanently out of service by filling in the well with backfill and sealant

### BASIC REQUIREMENTS TO DEACTIVATE A WELL

If a well is not used for five years the owner must ensure it is deactivated or closed. This does not, however, apply to existing wells that are actively maintained:

- with the intent of future service,
- for use as a backup water supply, or
- that have not yet been put into use.

### DEACTIVATING A WELL MEANS

- equipping the well with a secure cap or cap and cover;
- making the well available for inspection; and
- maintaining the well in a safe and sanitary condition.

Where the owner of the land on which a well is located does not know who owns the well, the owner of the land must ensure the applicable deactivation requirements are met.

### WHO MAY PERFORM A WELL DEACTIVATION?

A QWD, a QWPI, a QP, or any person under the direct supervision of a QWD, a QWPI or a QP, or the owner of the well may deactivate a well.

## CHAPTER 11 | WELL CLOSURE

### BASIC REQUIREMENTS TO CLOSE A WELL

If a well is not used for five years the owner must ensure it is deactivated.

If a well has not been used for 10 years, the owner must ensure that it is closed.

These rules do not, however, apply to existing wells that are actively maintained:

- with the intent of future service,
- for use as a backup water supply, or
- that have not yet been put into use.

Where the owner of the land on which a well is located does not know who owns the well, the owner of the land must ensure the applicable closing requirements are met.

### WHO MAY PERFORM A WELL CLOSURE?

- a QWD, or
- a person working under the direction of a QWD or a qualified professional with competency in hydrogeology.

However, this does not apply to wells less than 5 m (15 feet) deep, nor to excavated wells less than 15 m (50 feet) deep.

Well closure requirements also apply to exploratory wells, drilled to look for a source of water supply.

## REQUIREMENTS

- The well must be filled throughout its depth with sealants and backfill materials and a closure plug as set out in Figure 8 and Table 3.
- All equipment and instrumentation in the well must be removed if practicable.
- Well casings may be left in place.
- Ensure that the well is completely filled so as to prevent lengthwise movement of liquids within the well or annular space surrounding the casing or between casings.
- Every attempt should be made to seal off water bearing zones, if known, to prevent mixing of ground water.

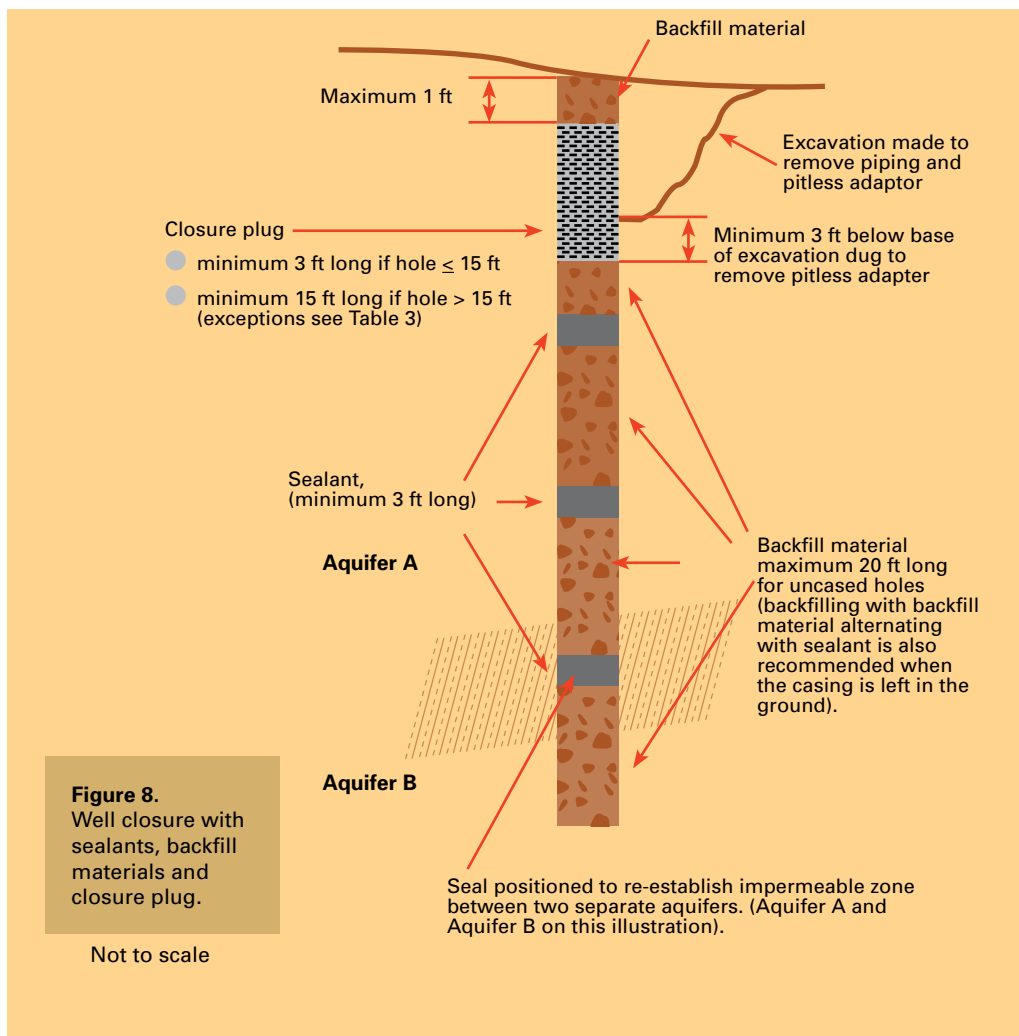


Table 3. Well Closure

| Class of well | Sub-class of well | Method of drilling | Orientation of well | Closure plug required? |                    | Minimum length of closure plug required (in feet) |                   | Does a well closure report need to be completed? | Does a well closure report need to be submitted |
|---------------|-------------------|--------------------|---------------------|------------------------|--------------------|---|-------------------|--|---|
|               |                   |                    |                     | Hole depth ≤ 15 ft     | Hole depth > 15 ft | Hole depth ≤ 15 ft                                | Hole depth > 15ft |  |   |
| Water supply  | Domestic          | Drilling           | Vertical            | Required               | Required           | 3V  | 15V               | Yes - See Schedule 3                             | Submit  |
|               |                   | Drilling           | Horizontal          | Optional               | Required           | Not specified                                     | 15V               | Yes - See Schedule 3                             | Submit  |
|               |                   | Driving            | Vertical            | Required               | Required           | 3V  | 3V                | Yes - See Schedule 3                             | Submit  |
|               |                   | Jetting            | Vertical            | Required               | Required           | 3V  | 15V               | Yes - See Schedule 3                             | Submit  |
|               |                   | Excavating         | Vertical            | Required               | Required           | 3V  | 3V                | Yes - See Schedule 3                             | Submit  |
|               | Non-Domestic      | Drilling           | Vertical            | Required               | Required           | 3V  | 15V               | Yes - See Schedule 3                             | Submit  |
|               |                   | Drilling           | Horizontal          | Required               | Required           | 3V  | 15V               | Yes - See Schedule 3                             | Submit  |
|               |                   | Driving            | Vertical            | Required               | Required           | 3V  | 3V                | Yes - See Schedule 3                             | Submit  |
|               |                   | Jetting            | Vertical            | Required               | Required           | 3V  | 15V               | Yes - See Schedule 3                             | Submit  |
|               |                   | Excavating         | Vertical            | Required               | Required           | 3V  | 3V                | Yes - See Schedule 3                             | Submit  |

### Explanation

**Optional :** A closure plug is not required, but is recommended.

**3 V :** The length of the closure plug must be at least 3 feet, unless a professional hydrogeologist or an MOE professional hydrogeologist confirms in writing that a lesser length will not significantly increase the risk of a contaminant entering the well or aquifer.

**15 V :** The length of the closure plug must be at least 15 feet, unless a professional hydrogeologist or an MOE professional hydrogeologist confirms in writing that a lesser length will not significantly increase the risk of a contaminant entering the well or aquifer.

**Submit :** Submit the final well closure report to the Comptroller of Water Rights.

### SCHEDULE 3

The well closure report must include:

- (a) well owner name and mailing address;
- (b) site address, legal description or PID (parcel identifier) of the property;
- (c) geographic coordinates (UTM or latitude and longitude) for the well recorded to accuracy of within 10m but as accurate as possible;
- (d) location map sketch or location description;
- (e) reason for closure;
- (f) well identification plate number if known;
- (g) if applicable, an attached copy of the well construction report (well record);
- (h) depth and diameter of the well;
- (i) method of constructing well (for example, excavated, drilled or driven);
- (j) diameter of well casing or liner and composition of material;
- (k) method of closure;
- (l) if applicable, an attached copy of the written confirmation of any alternative specifications;
- (m) details of the closure describing the depths, types and amounts of sealant and backfill material;
- (n) name, address and telephone number of the person completing the work;
- (o) name, address and telephone number of the person supervising completion of the work;
- (p) date of commencement and date of completion of the work.

#### **REPORTING REQUIREMENTS**

**The person responsible for closing a water supply well must complete a well closure report in accordance with Schedule 3 and submit that to the comptroller, with a copy to the well owner, within 90 days.**

## CHAPTER 12 | WELL PUMPS

### Purpose:

To specify who can install, maintain or repair well pumps or well heads and test or disinfect them.

Well pump installation standards will be developed in future phases of the regulation.

### QUALIFICATION REQUIREMENTS

Any person who:

- installs, maintains, repairs, removes or tests a well pump or a wellhead;
- conducts a flow test of a well; or
- disinfects a well or well pump; must either be a QWPI, a QWD or work under the direct supervision of a QWPI or a QWD or a professional hydrogeologist.

Note:

- a well owner can disinfect his own well