



Fact Sheet

Contamination of ground water resources has not been a major problem in most parts of Saskatchewan, due in large to the forgiving nature of the geology. The surficial glacial tills have served to protect this resource by intercepting most of the contamination and holding it until it can be naturally broken down into non-harmful products. It also follows that if this protective shield can remove harmful products, then it also will be that much more difficult to clean up after contamination occurs.

Any time a hole is completed, an avenue for contamination is opened. For this reason, abandonment of test holes and the decommissioning of wells is critical if we are to protect this vital resource.

Test Hole Abandonment

Saskatchewan's *Ground Water Regulations* state that, "when a test hole is abandoned without well completion, the driller shall immediately seal and fill this test hole with suitable uncontaminated material in a manner so as to prevent the detrimental vertical movement of water in the hole."

Dry Auger Test Holes

If no suitable formation is encountered, then the test hole should be filled with the material removed using the auger to compress the fill. A bentonite plug should be placed at the top 2 feet to prevent any surface contamination from entering the hole.

If a formation is encountered and a well is to be completed at this site within a reasonable time, then a 2-foot seal of bentonite should be placed before leaving the test hole site.

If a sand or gravel layer is encountered and no well is to be completed at this site, then the hole should be filled with the material removed during drilling. This material (containing as much clay as is available) should be compressed with the auger and the bentonite plug should extend to the 10-foot level.

If more than one formation is encountered and no well is to be completed, then an attempt must be made to seal the hole to prevent vertical movement between formations. This would mean that the hole should be plugged with bentonite from below the lowest formation to above the highest formation. To accomplish this, bentonite pellets must be used and slowly added to fill the total depth of the hole. An alternative would be to mix a high solids mud and pump the hole full from the bottom to the top.

Rotary Test Holes

If no suitable formation is encountered, then the test hole should be filled with the material removed. A bentonite plug should be placed at the top 2 feet to prevent any surface contamination from entering the hole.

If a sand or gravel layer is encountered and no well is to be completed at this site, then bentonite or a high solids mud should be used to fill the hole.

Well Abandonment

When a well is abandoned after the date of completion, the owner shall immediately fill and seal the well or cause the well to be filled with suitable uncontaminated material in a manner as to prevent the detrimental vertical movement of the water in the well.

Small Diameter Wells (drilled)

All materials must be removed and the hole must be filled with a high solids grout or cement.

If in the original construction the casing was cemented in place, then casing removal may not be possible. In this case, only the abandoned well shall be pressure grouted with a high solids grout or cement and the upper 10 feet shall be removed. A cover plate at least ¼ inch thick shall be permanently fixed to the casing and a 1-foot thick layer of bentonite placed over the capped well. The excavation shall then be backfilled to surface with impervious material.

Large Diameter Wells (bored)

As much casing as possible should be removed. This can be more of a problem with bored wells. The bottom 1-foot of the well should be sealed with bentonite, and then backfilled to 10 feet below ground (tamping if possible). The casing should be removed at the 10-foot level and the well sealed with a 1-foot layer of bentonite. The excavation should then be backfilled with impervious material.

Well Construction

A well shall be constructed so as to effectively prevent the entrance of surface water or other deleterious matter into any aquifer, and to prevent any mixing of water.

Because the drilling of a well exposes an aquifer to potential surface contamination, the annulus between the casing and the borehole should be sealed. A layer of bentonite pellets should be placed above the gravel pack to prevent any surface water intrusion or to prevent movement between formations.