

**STANDARD OPERATION PROCEDURE**

**FIVE**

**MONITORING WELL AND  
TEST-HOLE ABANDONMENT**

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## **1.0 MONITORING WELL AND TEST-HOLE ABANDONMENT**

### **1.1 Plugging of Monitoring Wells or Test Holes in Confined or Multiple Aquifers**

South Dakota Well Construction Standards contain specific requirements for plugging and abandonment of test holes and wells. Test holes or wells completed into confined aquifers or encountering more than one aquifer "must be plugged with bentonite grout if the weight of the bentonite grout column is sufficient to overcome the bottom hole pressure or must be plugged with cement grout placed from the bottom of the well or hole to within eight feet of the ground surface. Cement grout must be placed from eight feet below ground surface to within three feet of the ground surface. The top three feet may be filled with native material. If a pipe cannot be lowered inside the well casing to place grout from the bottom to the top, the well may be plugged by making a tight connection to the top of the casing and pumping a volume of cement grout, sufficient to fill the well, under pressure into the well . . . . If it cannot be verified that a well's casing was grouted in accordance with this chapter, an effort must be made to plug the annulus from the bottom of the annulus up to the ground surface with the same type of material or materials required for plugging inside the casing." (ARSD 74:02:04:67).

### **1.2 Plugging of Monitoring Wells or Test Holes in Unconfined Aquifers**

Wells completed into unconfined aquifers with only one aquifer encountered may be backfilled with clean sand or gravel to the top of the aquifer. "Test holes encountering a single, unconfined aquifer may be backfilled with drill cuttings or clean sand or gravel to the top of the aquifer. Above the aquifer, clay, bentonite grout, or cement grout shall be used for plugging to within at least three feet of the ground surface. If clay is to be used as a backfill material, a minimum of two feet of dry bentonite, bentonite grout, or cement grout must be placed at the top of the aquifer. The top three (3) feet of casing or hole, if not filled with clay, bentonite grout, or cement grout, shall be filled with native material. Plugging materials must be added to the well or hole via tremie pipe to any well or test hole less than 16 inches in diameter and to any well or test hole more than 50 feet deep. If it cannot be verified that a well's casing was grouted in accordance with this chapter, an effort must be made to plug the annulus from the bottom of the annulus up to the ground surface with the same type of material or materials required for plugging inside the casing." (ARSD 74:02:04:69).

### **1.3 Plugging of Wells or Test Holes in Low Permeability Formations**

"Test holes that encounter no water or only low-permeability formations such as clays, shales, and till must be backfilled to restore natural conditions as nearly as possible. Backfill material must be free of contamination and have a permeability equal to or less than the permeability of the formations encountered in the bore hole." (ARSD 74:02:04:70).

### **1.4 Plugging Records**

The DENR Ground Water Quality Program should be notified that monitoring wells at closed sites have been plugged according to the standards specified above.