

WISCONSIN CONSTRUCTION SPECIFICATION

19. WELL ABANDONMENT / DECOMMISSIONING

1. SCOPE

The work shall consist of furnishing all required materials, equipment, and labor to properly abandon the designated well or drill hole.

2. PROCEDURE

- A. Remove any pump, pump piping, debris or other obstacles that could interfere with sealing operations. In most situations the well casing should be left in place. The casing may be cut off three (3) feet below the ground surface. When the casing is removed, it shall be pulled during the abandonment filling process to prevent drillhole collapse.
- B. Sealing material shall be placed with a conductor (tremie) pipe either by pumping or by gravity except when chipped bentonite is used. The bottom end of the conductor pipe must initially reach the bottom of the well and must be kept submerged in the sealing material as it is placed.
- C. The discharge from a flowing well shall be reduced as much as possible with a packer or by extending the well casing to an elevation higher than the artesian head.
- D. Bentonite chips shall be poured onto a "U" shaped coarse mesh screen that is a minimum of two (2) feet long. One end of the screen shall be placed on the top of the well casing. Support the screen at a steep angle to allow the chips to tumble under their own weight. The chips should not be poured at a rate faster than a fifty (50) pound bag per three (3) minutes.

If water does not rise to the surface during the filling procedure, clean water from a known uncontaminated source shall be poured into the well. Pour water through the chips until it rises to the top of the well and maintains that level.

- E. The well shall be drilled out and refilled if the quantities calculated for the size and depth of well are not used.

3. MATERIALS

- A. Neat cement grout shall consist of a mixture of cement and water in the proportion of one (1) bag of Portland cement (94 pounds, ASTM C 150, Type I or API-10A, Class A) per five (5) to six (6) gallons of clean water from a known safe and uncontaminated source. Powdered bentonite may be added up to a ratio of five (5) pounds per 94 pound bag of cement.
- B. Concrete (sand-cement) grout shall consist of a mixture of cement, sand, and water in the proportion of one (1) bag of Portland cement, (94 pounds, ASTM C 150, Type I or API-10A, Class A) and one (1) cubic foot of dry sand per five (5) to six (6) gallons of

clean water from a known safe and uncontaminated source. The sand shall conform to ASTM C 33, fine aggregate for concrete.

- C. Sodium bentonite water slurry (drilling mud and cuttings) shall have a mud weight of at least eleven (11) pounds per gallon and a sand content of ten (10) to twenty-five (25) percent by volume of the slurry. When a bentonite slurry is used to seal a well, the top five (5) feet of the well shall be filled with neat cement grout, concrete (sand-cement) grout, concrete or approved bentonite chips.
- D. Clay slurry is a fluid mixture of water, clean native or commercial clay and drill cuttings. The clay slurry shall have a mud weight of at least eleven (11) pounds per gallon.
- E. Bentonite chips are irregularly shaped pieces of sodium bentonite that look very much like crushed limestone. The most current revision of the Wisconsin Department of Natural Resources publication PUBL-DG-016 contains a list of approved brands of bentonite chips that shall be used.
- F. Concrete shall consist of a commercially prepared mixture of sand, gravel, portland cement, and water. It shall contain at least 6 bags (94 pounds each) Portland cement per cubic yard and a maximum of 6 gallons of water per bag of cement. The maximum gravel size shall not exceed 1/3 of the inside diameter of the conductor pipe used to place the material.
- G. Conductor (tremie) pipe shall be: a) Metal pipe, b) rubber-covered hose reinforced with braided fiber or steel with a minimum rating of 300 psi, or c) thermoplastic pipe with a minimum rating of 100 psi. Thermoplastics include PVC, CPVC, PE, PB, or ABS and shall not be used for depths greater than 100 feet.

4. MARKINGS AND CERTIFICATION

Markings on material identifying the manufacturer and indicating compliance with appropriate specification(s) can be accepted as evidence that the material meets the requirements of this specification. If the material does not bear these markings, the manufacturer must certify that it complies with the requirements of this specification.

5. REPORTING

An abandonment report shall be sent to the Wisconsin [Department of Natural Resources](#) (WDNR) within 30 days for every well that has been permanently abandoned and a copy to the County Land Conservation Department (LCD)/Natural Resources Conservation Service (NRCS) office. Form 3300-5, Well/Drillhole/Borehole Abandonment, is available from DNR offices.