

New York State Department of Environmental Conservation

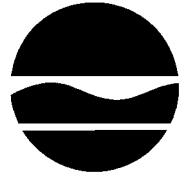
Division of Water

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WATER SUPPLY WELL DECOMMISSIONING RECOMMENDATIONS DIVISION OF WATER

Note: these recommendations do not apply to decommissioning of wells at hazardous waste sites. For information regarding such undertakings, contact the NYSDEC Division of Environmental Remediation.

I. Local and regional regulations

Prior to conducting well decommissioning, municipal authorities should be contacted to determine if there are local regulations regarding this activity. In the counties of Nassau and Suffolk, the NYSDEC Region 1 office must be contacted (631-444-0405) prior to any well decommissioning.

II. Written records

Complete and accurate written records of decommissioning operations should be maintained. The information to be recorded should include the original well log and/or construction record, the type of grouting material used, volume of material used, and method of placing grouting material into the well.

III. Removal of obstructions

Remove equipment, materials, debris, and obstructions that may interfere with sealing of the well or boring. This may include pumping equipment, drop pipe, packers, etc.

IV. Disinfection

The well should be disinfected using a solution of calcium hypochlorite, such as HTH, containing approximately 65% to 75% available chlorine. Common household bleach may be too weak. Calcium hypochlorite products containing fungicides, algicides, or other disinfectants should be avoided.

V. Casing

Appropriate measurements should be made to verify the depth of the well. Casing with an open annular space should be either grouted in place or removed. For casing removed from a collapsing formation, grout should be pumped through a tremie pipe so that during its removal the bottom of the casing remains submerged in grout.

Where casing is grouted in place, the casing should be cut off at least 12 inches below grade. For wells located in a building, upon completion of grouting the casing should be filled to floor level with no less than 12 inches of cement. Casing should be cut off not more than 3 inches from floor level. For wells terminating in a well pit, casing should be cut off not less than twelve inches below the grade established when the pit is filled.

After the grout has consolidated, the top of the casing should be closed and sealed. Steel casings should be sealed with a welded steel plate; PVC casings with a permanently affixed PVC cap.

VI. Screened interval

The portion of the well occupied by the well screen should be filled with clean sand or gravel (defined as being relatively free of clay and organic matter). The filling should be no less permeable than the formation surrounding the well screen and should extend no more than three feet above the top of the screen.

VII. Grouting of the well.

The entire casing, including riser annular spaces between casings should be filled. Sealing materials should have bearing strength sufficient to prevent subsidence and support traffic or building loads.

A. Slurry mixture and pumping - When a bentonite slurry, neat cement slurry or concrete slurry is used, it should be placed into the well under pressure via a tremie pipe of at least one inch inside diameter. At the start of operations, the tremie pipe should be placed at the bottom of the well to avoid segregation or dilution of sealing materials. The tremie pipe should be submerged in the slurry at all times during slurry placement. The tremie pipe may be raised slowly as grout is introduced to the casing or hole. Placing of grout should be continuous until grout appears at the top of the casing, at which time the tremie pipe may be removed.

B. Cement slurries - Neat cement or concrete slurries should be prepared by adding cement or sand-and-cement to the calculated required volume of clean water. The material should be satisfactory mixed until it is free of lumps, then immediately pumped into the well without delay.

C. Coarse grade or pelletized bentonite - Where coarse grade or pelletized bentonite is used, it should be poured slowly into the top of the well to avoid bridging of material in the casing or borehole. Pellets or coarse bentonite should be placed into the well by pouring at an even rate not to exceed five minutes per fifty pounds of materials. Fine bentonite particles which accumulate in the bottom of the shipping container should not be used. A work pipe or weighted drop string should be placed in the well and the height of accumulated plugging material measured after each 50 pounds of bentonite is placed in the well. If measurement indicates that bridging of plugging material has occurred, a work pipe, drill rods, or other weighted device should be run into the casing to break the bridge. The plugging operation should continue until the bentonite appears at the surface. Water should then be placed into the casing to promote expansion of the bentonite above the static water level.

D. Additional sealing recommendations for wells or borings in unconsolidated materials.

1. It is recommended that the portion of a well adjacent to unconsolidated material be filled with bentonite grout, high solids bentonite grout, or neat cement grout. Concrete grout is most appropriate for grouting in the dry portion of the hole.

2. A dug well 16 inches or greater in diameter may be sealed by pouring at a rate sufficient to completely fill the well without bridging using:

- (a) uniformly mixed dry bentonite powder or granular bentonite and sand in a ratio of one part bentonite to five parts sand;
- (b) clean unconsolidated materials with a permeability of 10^{-6} centimeters per second or less; or
- (c) concrete grout.

E. Additional sealing recommendations for wells or borings in rock.

The portion of a well or boring in rock should be grouted with neat cement. Wells penetrating cavernous rock may require placement of a bridge in competent rock over the void. Grout is then placed above the bridge.

VIII. Sealing flowing well.

The discharge from a flowing well must be stopped and the well sealed. Testing of the seal should involve capping the well for a period of one week and checking for any leakage around the outside of the casing. If any leakage occurs, the casing must be resealed prior to decommissioning. The Department should be notified when a well cannot be sealed as described.

IX. Site restoration

Well pits should be filled with clean soil to the established grade level. Upon completion of well decommissioning, the site should be restored to a condition that reasonably approaches the original condition of the property prior to the start of work. The work area should be graded to conform to existing ground contours. All materials, debris, tools, machinery, sealing material, grease, or other materials which have accumulated at the site should be removed and/or disposed of properly and in accordance with law.