

MONITORING WELLS--GROUTING

GROUTING--Monitoring Well by Rotary or Auger Drilling (Rule 8, Sec. 3j)

Grout shall fill the annular space of the monitoring well--
from the top of the filter pack or the filter pack seal (for a well installed in unconsolidated materials) **or**
from the bottom of the well casing (for a well penetrating bedrock);
to the ground surface **or**
to within one foot of the ground surface if a flush-mounted protective cover pipe is installed.

Annular space and well depth together determine the **grouting material(s)**; see table below.

Annular space	Depth		
	25 feet or less	100 feet or less	more than 100 feet
borehole diameter is less than 4 inches larger than well casing diameter	<i>pressure grouted with neat cement or a bentonite slurry</i>	<i>pressure grouted with neat cement or a bentonite slurry</i>	<i>pressure grouted with neat cement or a bentonite slurry</i>
borehole diameter is 4 inches or more larger than well casing diameter	granular bentonite may be used (or any of the materials listed for a well 100 feet or less in depth)	<i>pressure grouted with neat cement or a bentonite slurry or grouted with pelletized, medium grade, or coarse grade crushed bentonite</i>	<i>pressure grouted with neat cement or a bentonite slurry</i>

When a monitoring well includes a filter pack, a **filter pack seal** of pelletized, medium grade, or coarse grade crushed bentonite may be placed in the annulus, extending no more than 2 feet above the filter pack (Rule 8, Sec. 3e). Placement of the seal provides an exception to depths and materials specified in Sec. 3j.

Grouting must be completed upon the earlier of the following:

- 1) Within twenty-four (24) hours after the installation of the well casing;
- 2) Before drilling equipment is removed from the site.

GROUTING--Monitoring Well by Cable Tool (Rule 8, Sec. 3k)

1. **Borehole diameter** shall be 2 inches or more larger than well casing diameter.
2. The borehole shall be dug at least 3 feet, but no more than 5 feet, below the ground surface.
3. **Grouting materials** are granular bentonite or a bentonite slurry.
4. **Grouting methods--**
 - (a) The borehole shall be filled with grout during the installation of casing.
 - (b) Bentonite slurry may be introduced into the borehole annulus by gravity methods.
5. Grouting materials and methods shall be **in accordance with Rule 8, Sec. 3j** (above) when--
 - (a) a larger diameter temporary casing is used to install a smaller diameter permanent well casing; or
 - (b) a larger diameter borehole is drilled to install a smaller diameter well casing.

All casing diameters on this page (Rule 8, Sec. 3j and 3k) are nominal diameters.