N M ENVIRONMENT DEPARTMENT - GROUND WATER SECTION
MONITOR WELL CONSTRUCTION AND ABANDONMENT GUIDELINES

Purpose: These guidelines provide minimum construction and abandonment standards for drilled monitor wells which are to be sampled for general chemistry analyses. There may be additional requirements if hydrocarbons or other chemicals are involved. Also different guidelines may apply for other types of well construction such as driven wells.

General Drilling Specifications

1. The bore hole shall be drilled a minimum of 4 inches larger than the casing diameter to allow for the emplacement of sand and sealant.
2. No contaminants shall be present in the drilling mud.
3. All drill bits, drill rods, and down-hole tools shall be thoroughly cleaned prior to the start of drilling.
4. After completing the well casing installation, the well shall be developed so that formation water flows freely through the screen and is not turbid, and all sediment has been removed from the well.

Well Specifications (Refer to figure on reverse side.)

1. Use Schedule 40 or heavier PVC pipe, not less than 2 inches ID, as casing. The casing shall extend from the top of the screen to at least one foot above ground surface. The top of the casing must be protected by a cap, and the exposed casing must be protected by a locking shroud. The shroud shall be large enough in diameter to allow easy access for removal of the plastic cap on the PVC casing.
2. Use a minimum 20-foot section of machine slotted or other manufactured screen. A slot size of 0.010-inch generally is adequate for most installations. (No on-site, hack-saw slotting.)
3. The top of the screen shall be 5 feet above the water table, allowing for seasonal fluctuations.
4. The screen section should have centralizers at the top and bottom.
5. The annular space from the bottom of the screen (2 feet below the bottom of the screen if a blank section of casing is placed below the screen) to 2 feet above the screen shall be packed with sand. Clean, medium to coarse sand is recommended. The sand pack should be properly sized to prevent fines in the formation from entering the well. For deeper wells the sand shall be placed by a tremmie pipe.
6. The annular space above the gravel pack shall be grouted or sealed. Pressure grouting with bentonite or cement using a tremmie pipe is preferred. The alternative is to form a bentonite seal by placing bentonite pellets (1/4 or 1/2 inch in size) for at least 2 feet above the gravel pack and proceeding in accordance with Item 7 below.
7. The annular space above the bentonite seal can be filled with drill cuttings, or clean sandy clay or tighter soil to within 10 feet of the ground surface. The remaining 10 feet must be sealed with a bentonite-cement grout seal (two to eight percent bentonite by weight).
8. A two-foot minimum radius, four inch minimum thickness concrete pad shall be poured around the shroud. The concrete shall be sloped that rainfall and runoff flows away from the shroud.

Abandonment: Monitor wells no longer in use shall be plugged in such a manner as to preclude migration of surface runoff or ground water along the length of the well. Where possible, this shall be accomplished by removing the well casing and pumping expanding cement from the bottom to the top of the well using a tremmie pipe. If the casing cannot be removed, the casing shall be ripped or perforated along its entire length if possible, and grouted. Filling with bentonite pellets from the bottom to the top is an acceptable alternative to pressure grouting.

Variances: Requests for variances from these guidelines shall be in writing to the Program Manager, NMED Ground Water Section, 1190 St. Francis Drive, P. O. Box 26110, Santa Fe, NM 87502. Each request shall explain in detail the evidence supporting the request. The GWS approval also shall be in writing.

Signed: _____ Date: 8/15/92
Ernest C. Rebuck, Program Manager, Ground Water Section