

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

WELL PLUGGING

(NO.)
Code 755



DEFINITION

The sealing of wells in a specified manner at specified depths and/or the capping of free flowing wells.

PURPOSES

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- Prevent uncontrolled loss of ground water (artesian flow);
- Prevent the commingling of chemically or physically different ground waters between separate water bearing zones.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to any drilled, cored, bored, washed, dug, jetted or otherwise constructed vertical water well that withdraws water from one or more fresh water aquifers or producing zones within a single aquifer in which one of these zones may be the cause for high mineral content water produced by the well. It also applies to uncontrolled flowing wells (artesian).

This practice does not apply to wells that were used for waste disposal, or if evidence of contamination exists. This practice does not apply to wells that contain contaminant levels that exceed state or Federal water quality standards. Treatment of contamination source(s) is required before a well is decommissioned. This practice standard does not apply to decommissioning wells. See NRCS conservation practice standard Decommissioning Wells, Code 351.

CRITERIA

Planned work shall comply with all Federal, state, and local laws and regulations. Plans to plug a water well must be permitted by the appropriate Water Management District (WMD) and comply with this standard, Florida Department of Environmental Protection (FDEP) Chapter 62-532 Florida Administrative Code (F.A.C.) Water Well Permitting and Construction Requirements, and the appropriate water management district (WMD) Chapter 40-3 F.A.C., Regulation of Wells.

Data collection. All available data for the well shall be collected and reviewed from as-built construction and maintenance records; e.g., well log, the materials schedule, length, and diameter of casing, total well depth, type of liners and screens, and related information. The existing conditions of the well shall be documented as shown in the "Plans and Specifications" section.

The documentation must identify the condition of the well casing and if replacement is needed.

Capping artesian wells. Where it has been determined that there are no water quality problems from the flowing well and the geophysical log shows no commingling of the aquifer, the well may be capped with an appropriate valve.

Casing. In areas to be plugged, wells with open annular space around the casing shall be treated in a manner that seals the voided annular space. Methods of treatment include (1) removing the casing or (2) grouting the casing in place.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

Casing removal is acceptable when the entire casing can be removed from the well. Casings removed from a collapsing formation shall be grouted concurrent with removal such that the bottom of the casing remains submerged in the grout. Casings grouted in place shall employ a grouting procedure that will fill the open space. Perforated or ripped casing shall provide sufficient apportioned open area to assure passage of the grout to the annular space. The casing may be required to be perforated or ripped throughout the entire length of a confining layer if required by the permitting authority.

In the section of the well to be restored, the well casing must meet the requirements of WMD Chapter 40-3 F.A.C.

Sealing materials. The well bore shall be filled from the bottom to the land surface with neat cement grout. Alternate methods providing equivalent protection shall be approved by the FDEP or the permitting authority. All materials used for sealing any portion of the well shall have a hydraulic conductivity equivalent to or less than that of the lowest hydraulic conductivity of the geologic materials being sealed. Properties of sealing materials shall conform to characteristics listed in ASTM D 5299, Part 6.3 Plugging Materials.

Fill materials. When allowed by state regulations, fill materials, such as sand, pea gravel, sand-gravel mix or crushed stone may be used to plug the well provided that zones of sealing materials (conforming to ASTM D 5299, Part 6.3) are placed no less than one foot thick each at intervals no greater than 10 feet within the column. Fill materials shall be clean and free of organic or other foreign matter. The gradation shall be such that bridging will not occur during placement. Approval for using fill materials must be obtained in writing from the FDEP or the permitting authority.

Placement of materials. All materials shall be placed without bridging. For wells greater than 30 inches in diameter, backfill shall be placed in a manner that minimizes segregation and bulking in order to prevent surface subsidence.

Protection. All disturbed areas surrounding the well shall be vegetated according to NRCS conservation practice standard Critical Area Planting, Code 342.

CONSIDERATIONS

This practice may be part of a ground water protection system that includes water and chemical management practices.

To the extent practicable, the well should be plugged in a manner that restores the original hydrogeologic conditions of the well site and does not preclude the use of the site from future land management practices.

Well plugging requires special consideration of specific geological, biological, physical, and climatic conditions, the chemical composition of the surrounding soil, rock, and ground water at the well site, and the well's construction practices. All procedures, fill and sealing materials need to be selected according to these considerations.

PLANS AND SPECIFICATIONS

Plans and specifications for plugging water wells shall be consistent with this standard and shall describe the requirements for applying the practice to achieve its intended purposes. A record of the installation of this practice shall be made and shall include the following information:

- Location of the well by latitude/longitude, township/range, section, quarter-quarter, or other georeference convention, of such precision that it can be readily located in the field, if required, in the future.
- Date of well plugging.
- Name of landowner.
- Total depth of well.
- Inside diameter of well bore or casing.
- Casing material type or schedule (e.g., standard weight steel, or PVC Schedule-80).
- Static water level measured from ground surface.
- Types of materials used for filling and sealing, quantities used, and depth intervals for emplacement of each type.

All construction must be performed by a Florida licensed water well contractor except for wells exempted under WMD Chapter 40-3 F.A.C.

OPERATION AND MAINTENANCE

The well site shall be inspected periodically to ensure that the well and the adjacent area have not settled or eroded, or are otherwise adversely disturbed. The well site and adjacent ground surfaces shall be maintained in a manner that prevents ponding of surface runoff on the site.

REFERENCES

ASTM D 5299
FDEP Chapter 62-532 F.A.C.
NRCS Conservation Practice Standards
Critical Area Planting, Code 342
Well Decommissioning, Code 351
WMD Chapter 40-3 F.A.C.