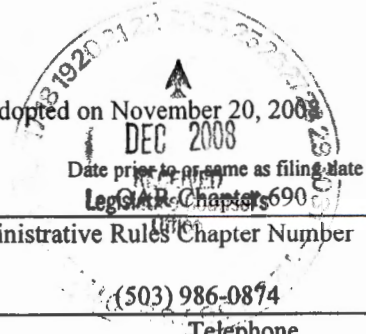


Secretary of State  
Certificate and Order for Filing  
**PERMANENT ADMINISTRATIVE RULES**

I certify that the attached copies\* are true, full and correct copies of the PERMANENT Rule(s) adopted by the Water Resources Commission.



Oregon Water Resources Department, Technical Services Division  
Agency and Division

Administrative Rules Chapter Number

Ruben Ochoa

725 Summer St. NE, Suite A, Salem, OR 97301

(503) 986-0874

Rules Coordinator

Address

Telephone

to become effective January 2, 2008.

<sup>a</sup>  
Date upon filing or later

Rulemaking Notice was published in the September 1, 2008 Oregon Bulletin.\*\*

Month and Year

**RULE CAPTION**

Well constructor and landowner responsibility regarding water well construction, maintenance, alteration, conversion and abandonment activities.

Not more than 15 words that reasonably identifies the subject matter of the agency's intended action.

**RULEMAKING ACTION**

List each rule number separately (000-000-0000)

Secure approval of new rule numbers (Adopted or Renumbered rules) with the Administrative Rules Unit prior to filing.

**ADOPT:** 690-205-0205; 690-215-0006; 690-215-0025; 690-215-0035; 690-220-0115; 690-240-0385

**AMEND:** 690-200-0050; 690-205-0200; 690-215-0005; 690-215-0030; 690-215-0040; 690-220-0030; 690-220-0040;  
690-220-0050; 690-220-0070; 690-220-0080;  
690-240-0010; 690-240-0035; 690-240-0375;

**REPEAL:** 690-220-0060

**RENUMBER:** n/a

**AMEND & RENUMBER:** n/a

Stat. Auth.:

Other Auth.:

Stats. Implemented: ORS

**RULE SUMMARY**

The Water Resources Commission (Commission) adopted rules that establish and clarify the initial notice of water supply well construction (Start Card) for water supply and monitoring wells, clarify the responsibility for work performed and standards for materials used in water supply well alterations, and allow the use of unhydrated bentonite for well abandonment. In addition, the rules establish standards for the type and placement of unhydrated bentonite used for well abandonment.

Authorized Signer

Printed name

Date

*Ruben L. Ochoa*

*Ruben L. Ochoa*

*12/18/08*

\*With this original, file one photocopy of certificate, one paper copy of rules listed in Rulemaking Actions, and electronic copy of rules. \*\*The Oregon Bulletin is published the 1st of each month and updates rules found in the OAR Compilation. For publication in Bulletin, rule and notice filings must be submitted by 5:00 pm on the 15th day of the preceding month unless this deadline falls on a weekend or legal holiday, when filings are accepted until 5:00 pm on the preceding workday.

ARC 930-2005

## WATER RESOURCES DEPARTMENT

### DIVISION 220

#### Abandonment of Wells

##### 690-220-0005

###### Temporary Abandonment

Any water supply well to be temporarily removed from service, temporarily abandoned due to a recess in construction, or temporarily abandoned before commencing service, shall be capped with a watertight seal, watertight welded steel cap, or threaded cap. In the event that temporary abandonment is to be of 90 days or less, the temporary steel cap may be welded to the well casing with a minimum of four separate welds, evenly spaced, each at least 1/2 of an inch in length. Steel or cast iron caps shall be at least 3/16 of an inch in thickness. Access ports and airlines, as described in OAR 690-210-0280, shall be maintained during the temporary abandonment. During the temporary abandonment, the well must be maintained to the standards prescribed in OAR 690-215.

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795

Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0005; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

##### 690-220-0030

###### Permanent Abandonment

(1) Any water supply well that is to be permanently abandoned shall be completely filled in such a manner that vertical movement of water within the well bore, including vertical movement of water within the annular space surrounding the well casing, is effectively and permanently prevented. If a dry or non-producing water supply well is to be permanently abandoned, it shall be abandoned in accordance with these standards. Unless otherwise stated in these rules, all permanent water supply well abandonments shall be performed by a licensed Water Supply Well Constructor.

(2) The abandonment procedure shall be recorded on a form provided by or previously approved in writing by the Department. The form shall include, as a minimum, all the requirements as listed in OAR 690-205-[0080\_(7)] 0210, plus:

(a) Method of abandonment;

(b) If assigned, the well identification tag number, original start card number, and owner's well number of the abandoned well.

(3) When a well that has a well identification tag on it is permanently abandoned, the well identification tag shall be destroyed. The well identification tag shall not be reused.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795

Stats. Implemented: ORS 536.090 & 537.505 - 537.795

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0010; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 2-2006, f. & cert. ef. 6-20-06; WRD 11-2008, f. & cert. ef. 1-2-09

#### 690-220-0035

##### **Abandonment of an Existing Water Well After Replacement**

A landowner who replaces an old well by drilling a new well shall permanently abandon the old well if the old well is within a setback as defined in OAR 690-210-0030.

Permanent abandonment of a well located within a setback shall occur within one year after the function of the well is replaced or within one year after the water right, if applicable, is transferred to the new well, whichever is later.

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795

Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795

Hist.: WRD 7-2001, f. & cert. ef. 11-15-01

#### 690-220-0040

##### **Abandonment of Cased Wells [*in Unconsolidated Formations*]**

*[Uncased water supply wells to be abandoned that extend only into unconsolidated materials shall be completely filled with cement grout or concrete. This class of water supply wells may be abandoned using unhydrated bentonite with special standard approval. (See Figure 220-1.)]*

**(1) If all or a portion of the water supply well casing or the liner pipe is not removed during the abandonment of a well, the remaining casing or liner shall be thoroughly ripped or perforated. The number and size of perforations may vary, however, the perforations must be sufficient enough to allow grout to migrate outside the casing and effectively prevent the vertical movement of water. The annular space between the casing or liner and the drillhole wall shall be effectively and completely filled with cement grout applied under pressure.**

**(2) Perforations are not required in the sealed interval provided proof of the original seal can be verified with the original well report. The verified seal interval shall be filled with cement grout, concrete or unhydrated bentonite.**

**(3) Uncased portions of a cased well to be abandoned shall be filled in accordance with OAR 690-220-0030 through 690-220-0050.**

**(4) The well casing to be abandoned may be severed below land surface and removed. (See Figure 220-3.)**

ED. NOTE: Figures referenced in this rule are available from the agency.

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795

Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79, Renumbered from 690-063-0011; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 11-2008, f. & cert. ef. 1-2-09

#### 690-220-0050

##### **Abandonment of Uncased Wells [*in Consolidated Formations*]**

*[Uncased water supply wells to be abandoned that penetrate a water-bearing rock formation shall be filled with concrete or cement grout, or with alternating layers of cement grout or concrete and clean gravel throughout the water-producing horizon. A concrete or cement grout plug shall be constructed from the top of the rock formation to a depth of at least 20 feet below the top of the rock formation. The remainder of the well above the rock formation shall be filled to land surface with cement grout or concrete.]*

*Plugs of cement grout or concrete, at least three feet in length, shall be placed in non-producing zones between all water-bearing zones. In all cases, a cement grout or concrete plug, at least three feet in length, shall be constructed in a non-producing stratum immediately above the uppermost water-bearing zone. This class of water supply wells may be abandoned using unhydrated bentonite with special standard approval. (See Figure 220-2.)]*

**(1) Uncased portions of water supply wells to be permanently abandoned shall be completely filled with cement grout, concrete or unhydrated bentonite: (See Figure 220-1) (See Figure 220-2)**

**(2) Uncased portions of water supply wells that penetrate a water-bearing formation may be abandoned with alternating layers of cement grout, concrete or unhydrated bentonite and clean gravel throughout the water-bearing zones in the following manner:**

**(a) In all cases, non water-bearing zones shall be filled with cement grout, concrete or unhydrated bentonite.**

**(b) Clean gravel may only be placed in the water-bearing zones verified by an original water supply well report or other documentation acceptable to the Department. A vertical column of gravel that exceeds a total length of 50 feet shall only be placed with prior Department approval. Non water-bearing portions shall be filled with a plug of cement grout, concrete or unhydrated bentonite. Gravel shall not exceed a maximum of 50% of well depth without prior Department approval. Gravel may be placed in multiple water-bearing zones, not to exceed 50 feet for each zone. In no case shall gravel be placed above 18 feet below land surface.**

ED. NOTE: Figures referenced in this rule are available from the agency.

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795

Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79, Renumbered from 690-063-0012; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 11-2008, f. & cert. ef. 1-2-09

#### **[690-220-0060**

##### ***Abandonment of Cased Wells***

*If the water supply well casing or the liner pipe is not removed during the abandonment of a well, the casing or liner shall be thoroughly ripped or perforated. The number and size of perforations may vary. However, the perforations must be sufficient enough to allow grout to migrate outside the casing and effectively prevent the vertical movement of water. Perforations are not required in the sealed interval provided proof of the original seal can be verified with the original well report. The annular space between the casing or liner and the drillhole wall shall be effectively and completely filled with cement grout applied under pressure. The remainder of the well shall be filled with cement grout or concrete. Uncased horizons in a cased well to be abandoned shall be filled in accordance with OAR 690-220-0030 through 690-220-0050. The well casing to be abandoned may be severed below land surface and removed. (See Figure 220-3.)]*

*[ED. NOTE: Figures referenced in this rule are available from the agency.]*

*[Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795*

*Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795*

*Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79, Renumbered from*

690-063-0013; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01]

#### **690-220-0070**

##### **Abandonment of Artesian Wells**

In addition to OAR 690-220-00 [60] **40 and 690-220-0050**, the flow of artesian water supply wells to be abandoned shall be confined or restricted by cement grout applied under pressure, or by the use of a suitable well packer, or a wooden plug placed at the bottom of the confining formation immediately above the artesian water-bearing zone. Cement grout or concrete shall be used to effectively fill the well to land surface. (See Figure 220-4, 1986.)

ED. NOTE: Figures referenced in this rule are available from the agency.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0015; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 11-2008, f. & cert. ef. 1-2-09

#### **690-220-0080**

##### **Abandonment of Driven and Jetted Wells**

Provided an annular seal meeting the requirements of OAR 690-210-0180 can be confirmed, a cement grout plug shall be placed by grout pipe opposite all perforations or openings in the water supply well casing. The remainder of the well shall be filled with cement grout. If no annular seal can be confirmed, the well shall be abandoned by removing the casing and filling the borehole with [*an approved sealant*] **cement grout** (see OAR 690-220-0120).

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0020; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 11-2008, f. & cert. ef. 1-2-09

#### **690-220-0090**

##### **Abandonment of Filter or Gravel Pack Wells**

Filter or gravel pack water supply wells may only be abandoned under a special standard. Any method of abandonment proposed must ensure that all perforated sections of the casing will be pressure grouted throughout, and that the remainder of the well is filled with cement grout. (See definition of pressure grout in OAR 690-200)

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0016 & 690-063-0025; WRD 7-2001, f. & cert. ef. 11-15-01

## **690-220-0095**

### **Abandonment of Dug Wells**

(1) Abandonment of a dug water supply well shall be approved by the Department before work is started. The Department shall be notified of the proposed abandonment. The notification shall include:

- (a) Location;
- (b) Name of the owner;
- (c) Well diameter;
- (d) Well depth;
- (e) Depth to water;
- (f) Type of well casing or liner material if any; and
- (g) The proposed method of abandonment.

(2) A method to be used in the abandonment will be approved by the Department if the method will adequately protect the ground water resource. Dug wells penetrating more than one water bearing zone shall be abandoned in a manner to eliminate the possibility of leakage from one water bearing zone to another.

(3) The well shall be abandoned by a licensed Water Supply Well Constructor, a landowner with a landowner well construction permit and bond, or by a landowner in the presence of the watermaster or other Department representative.

Stat. Auth.: ORS 183, 536, 537 & 540

Stats. Implemented: ORS 183, 536, 537 & 540

Hist.: WRD 7-1988, f. & cert. ef. 6-29-88; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 2-2006, f. & cert. ef. 6-20-06

## **690-220-0100**

### **Obstructions and Possible Contaminants**

All obstructions or debris which may interfere with effective sealing operations shall be removed from the water supply well to be abandoned. Any foreign matter capable of causing ground water contamination shall be removed prior to placing any sealing material.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0026; WRD 7-2001, f. & cert. ef. 11-15-01

## **690-220-0110**

### **Removal of Well Casing During Abandonment**

If the casing of a water supply well is removed during abandonment, the well shall be plugged and sealed in accordance with OAR 690-220-0030 through 690-220-0050 and shall be filled with sealing materials as the casing is removed.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0021; WRD 7-2001, f. & cert. ef. 11-15-01

690-220-0115

Unhydrated Bentonite and Method of Placement

(1) When abandoning a pre-existing well with unhydrated bentonite the Water Supply Well Constructor shall provide additional notification to the Regional Well Inspector or the Well Construction Program Coordinator in Salem by fax, e-mail or telephone 72 hours prior to starting abandonment work. The additional notice referenced under this section shall be effective January 1, 2009, through December 31, 2013.

(a) In case of an emergency, the additional notification is not required; however, the Water Supply Well Constructor shall notify the Department prior to beginning abandonment work as required in OAR 690-205-0200.

(b) The Department will review this provision prior to December 31, 2013, to evaluate the effectiveness of unhydrated bentonite in the abandonment of water supply wells.

(2) Unhydrated bentonite used in the abandonment of water supply wells shall meet the following requirements:

(a) Specifically designed for use in water supply wells; and

(b) Within industry tolerance for dry western sodium bentonite; and

(c) Free of polymers that promote bacterial growth; and

(d) Manufactured to be 3/8-inch or 3/4-inch; and

(e) National Sanitation Foundation (NSF) approved or have a swell index greater than 15 milliliters (ml) per 2 grams (gm).

(3) Powdered bentonite, bentonite grout or bentonite slurry shall not be used to abandon water supply wells.

(4) Unhydrated bentonite shall only be used to abandon water supply wells when in contact with water having less than 800 parts per million (ppm) total dissolved solids (TDS).

(a) Unhydrated bentonite may be used to abandon water supply wells exceeding 800 ppm TDS if the bentonite manufacturer provides documentation that their product can be used in water that exceeds 800 ppm TDS.

(1) Prior Department approval is required before placement.

(2) The bentonite manufacturer's documentation and Department approval shall be submitted with the Water Supply Well Report as required in OAR 690-205-0210.

(b) In all cases, the TDS shall be reported on the Water Supply Well Report as required in OAR 690-205-0210.

(5) Water supply wells with casing that is at least four inches in diameter and less than eight inches in diameter may be abandoned with unhydrated bentonite to a maximum well depth of 700 feet, if being placed through water. Unhydrated bentonite may be used deeper with prior Department approval.

(6) Water supply wells with casing that is at least four inches in diameter and less than eight inches in diameter may be abandoned with unhydrated bentonite to a maximum well depth of 1000 feet, if being placed through air. Unhydrated bentonite may be used deeper with prior Department approval.

(7) Water supply wells with casing that is at least eight inches in diameter may be abandoned with unhydrated bentonite to a maximum well depth of 1200 feet, if being placed through water. Unhydrated bentonite may be used deeper with prior Department approval.

**(8) Water supply wells with casing that is at least eight inches in diameter may be abandoned with unhydrated bentonite to a maximum well depth of 1500 feet, if being placed through air. Unhydrated bentonite may be used deeper with prior Department approval.**

**(9) Unhydrated bentonite shall be screened across a minimum 1/4-inch mesh screen during placement to minimize the introduction of bentonite dust into the sealing interval. The resulting seal shall be free of voids or bridges.**

**(10) A sounding or tamping tool shall be used in the sealing interval during placement to measure the fill rate and to break up possible bridges or cake formations.**

**(11) Unhydrated bentonite shall be poured at the manufacturers recommended rate in the water-filled portion of the drillhole and shall not be less than two minutes per 50 pound sack.**

**(12) In a dry sealing interval, (above the water level), bentonite shall be hydrated from land surface to a minimum depth of 50 feet below land surface. Unhydrated bentonite shall be hydrated with potable water in maximum ten foot lifts to ensure activation.**

**(13) The estimated and actual volume of sealing material used shall be calculated and reported on the Water Supply Well Report as required by OAR 690-205-0210.**

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 11-2008, f. & cert. ef. 1-2-09

#### **690-220-0120**

##### **Cement Grout**

Cement grout for use in abandonment operations shall conform to the requirements of OAR 690-210-0310.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78; ef. 1-1-79, Renumbered from 690-63-031 by WRD 13-1986, f. 10-7-86, ef. 11-1-86

#### **690-220-0130**

##### **Concrete**

Concrete for use in abandonment operations shall conform to the requirements of OAR 690-210-0315.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0035; WRD 7-2001, f. & cert. ef. 11-15-01

#### **690-220-0140**

##### **Method of Placement of Concrete or Cement Grout**

Concrete or cement grout used as a sealing material in abandonment operations shall be introduced at the bottom of the well or required sealing interval and placed progressively upward to the top of the well. All such sealing materials shall be placed by the use of a



grout pipe or by dump bailer in order to avoid segregation or dilution of the sealing materials.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79;; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0040 by WRD; WRD 7-2001, f. & cert. ef. 11-15-01