WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 200
WATER SUPPLY WELL CONSTRUCTION STANDARDS

690-200-0005
Basis for Regulatory Authority

Instructions: Separately attached PDF of Table 200-1 is to replace the table linked at the bottom of 690-200-0005 in the Editor's Note.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 536.027, 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; Renumbered from 690-060-0005 by WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 3-2014, f. & cert. ef. 11-25-14; WRD 5-2016, f. & cert. ef. 9-6-16

690-200-0020
General Statement About the Standards

(1) The rules and regulations set forth herein provide the minimum standards for the construction, conversion, alteration, maintenance, and abandonment of water supply wells. After the effective date of adoption of these rules and regulations, no water supply well shall be constructed, altered, converted, or abandoned contrary to the provisions of these rules and regulations without prior approval from the Water Resources Department. Violation of these standards may result in enforcement under OAR Chapter 690, Division 225, including suspension or revocation of a constructor's license, imposition of civil penalties on the landowner or constructor, action on a bond, or other sanctions authorized by law.

(2) Every well shall be designed and constructed to adapt to the existing local geologic and ground water conditions at the well site and shall fully utilize every natural protection to the ground water supply. If prior to or during construction the well constructor becomes aware that specific site conditions will not allow adherence to the following minimum well standards, the constructor shall request and obtain written approval from the Director to use alternative construction methods, materials or standards. The request shall be in writing and submitted to the Director as described in OAR 690-200-0021. Special standard approval from the Director must be obtained prior to completion of the well.

(3) Certain wells constructed under these rules may be suitable for use as public, community, municipal, or public utility supplies. Regulations administered by other agencies may apply in addition to those in this chapter (see Appendix 1).

[ED. NOTE: Appendices referenced are not included in rule text. Click here for PDF copy of appendices.]

Stat. Auth.: ORS 536.027, ORS 536.090 & ORS 537.505 - ORS 537.795
Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; Renumbered from 690-060-0008 & 690-060-0040 by WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15

690-200-0021
Special Standards

(1) Site conditions may require specific design, construction, and abandonment procedures to adapt to the existing local geologic and ground water conditions to fully utilize every natural protection to the state's ground water. Specific site conditions may require different design, construction, setback, or abandonment standards than required by the Water Supply Well construction rules. Alternative technologies or methods not addressed in these rules may also exist which could be effectively utilized in the construction or abandonment of a water supply well. Prior to the completion of the well, a bonded constructor must request and receive approval from the Department to use methods or materials that do not meet the water supply well construction standards. The Department may approve such requests either orally or in writing. If oral approval is granted, the written request must be submitted to the Department within three working days of the date of the oral approval. Failure to submit a written request as described above may void the prior oral approval. The proposed methods or materials shall provide at least the same level of resource protection as that which is provided by these rules.

(2) The written request for special standards shall include:

(a) Name, license number and signature of the bonded well constructor;
(b) Location of the well by county, township, range, section, tax-lot (if assigned) and either the 1/4, 1/4 section or Latitude and Longitude as established by a global positioning system;
(c) Name and address of landowner;
(d) Address of the project/well site;
(e) Type of work;
(f) The distance to the nearest well and septic tank or drainfield;
(g) The reasons(s) that conformance to the rules and regulations for water supply wells cannot be met;
(h) A diagram and written description showing the proposed water supply well design, construction, or abandonment;
(i) A site map showing the relationship of the well to any existing septic systems, if the request is to place a well within the minimum setbacks described in OAR 690-210-0030;
(j)The well identification number, if assigned; and
(k) The start card number.

Stat. Auth.: ORS 536.027, 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505-537.795
Hist.: WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; Renumbered from 690-210-0015 by WRD 7-2001, f. & cert. ef. 11-15-01

690-200-0025
Special Area Standards

If at any time, the Commission finds that different or supplemental standards are required for the safe development of ground water from any aquifer or area, special area standards for the construction and maintenance of water supply wells within such areas may be adopted as rules by the Commission. In the absence of such special area standards, these rules constitute the sole administrative standards of the Water Resources Department governing construction, conversion, maintenance, alteration, and abandonment of water supply wells.
Stat. Auth.: ORS 536.027, ORS 536.090 & ORS 537.505 - ORS 537.795
Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795
Hist.: WRD 9-1978, ef. 12-12-78, f. 1-1-79; Renumbered from 690-060-0045 by WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-200-0027
Restrictions on Water Supply Well Construction and Use in Critical Groundwater Areas or Areas Withdrawn by Commission Order

(1) The use of ground water is restricted in Critical Ground Water Areas or Withdrawal Areas established by Commission Order, under ORS 537.735 and 536.410. Before constructing a water supply well, the constructor shall determine whether the proposed well site is within a Critical Ground Water or Withdrawal Area. (Refer to Figure 200-1.)

(2) If the water supply well is within a Critical Ground Water or Withdrawal Area, the constructor shall contact the watermaster for the county where the water supply well is to be constructed for more information. (Refer to Table 200-2.)

(3) Construction of water supply wells in violation of a critical ground water or withdrawal order are subject to enforcement action as described in OAR Chapter 690, Division 225.

[ED. NOTE: Tables and Figures referenced are available from the agency.]

Stat. Auth.: ORS 536.027, ORS 536.090 & ORS 537.505 - ORS 537.795
Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795
Hist.: WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-200-0028
Designated Special Area Standards

(1) Special Area Standards for the Construction and Alteration of Water Supply Wells in the Lakeview Area.

(a) As used in this rule and illustrated in Figure 200-3, "The Lakeview Area" includes the area located in Sections 4, 5, 8 and 9 of Township 39 South, Range 20 East of the Willamette Meridian, Lake County, Oregon. Beginning at a point on the West line of Section 4, said point bears South 1 40' 45" East — 2245.31 feet from the Northwest Corner of Section 4; thence South 89 54'45" East — 1907.04 feet to the West right of way line of the Fremont Logging Road; thence South 39 26' 40" East along the West right of way line of the Fremont Logging Road — 3095.16 feet; thence South 1 53' 14" East — 617.32 feet to the South line of Section 4; thence continuing in Section 9 — South 00 13' 8" West parallel to the North South centerline of Section 9 - 2649.14 feet to the East West centerline of Section 9; thence South 89 45' 31" West along the East West centerline of Section 9 — 3782.55 feet more or less to the West line of Section 9; thence West along the East West centerline of Section 8 — 1320.00 feet more or less to the center East 1/16 corner of Section 8; thence North 2640.00 feet more or less to the East 1/16 corner common to Sections 5 and 8; thence North 1 41' 33" West — 2630.48 feet more or less to the center East 1/16 corner of Section 5; thence North 1 40' 45" West — 410.32 feet; thence South 59 54' 45" East — 1307.02 feet more or less to the point of beginning.

(b) Any new, altered, deepened or converted well in the sedimentary units (clay, sand, silt, gravel) in the Lakeview Area shall be cased and sealed according to OAR 690, division 210 with the following additional requirements:

(A) Unperforated casing and seal shall extend from land surface to a depth of 250 feet below land surface; and

(B) Perforated casing may extend below the seal.

(c) Liner installed in any new, altered, deepened or converted well in the sedimentary units (clay, sand, silt, gravel) in the Lakeview Area shall not extend more than 10 feet above the bottom of the unperforated casing.

(d) Alternatives to the special area standards shall be approved only if it can be demonstrated that the alternative techniques proposed to be used are as effective as the techniques required in subsection (1)(b) and (1)(c) above. Such alternatives require prior written approval by the Department and follow-up testing as may be required by the Department.

(e) Except as they may conflict with subsection (1)(b) and (1)(c), all other provisions of Oregon Administrative Rules for Well Construction and Maintenance Standards apply.

(f) This rule is applicable to wells for which construction, alteration, deepening or conversion began on or after April 1, 2004.

(g) This special area standard may be revised at a future date when additional information and analysis is provided from other agencies including the Oregon Department of Environmental Quality.

Note: These rules were filed with the Office of the Secretary of State and took effect on 9/6/2016.
The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2)(a) when published by the Secretary of State.

(2) Special Area Standards for the Construction, Conversion and Maintenance of Water Supply Wells for the "Petes Mountain Area", Clackamas County.

(a) As used in this rule and illustrated in Figure 200-4, "The Petes Mountain Area" includes the area located in Sections 28, 29, 32, 33 and 34 Township 2 South, Range 1 East, Willamette Meridian; and Sections 2, 3, 4, 5, 9, 10, 11, 15 and 16, Township 3 South, Range 1 East, Willamette Meridian. Beginning at the intersection of SW Ek Road and SW Stafford Road (T.2 S., R.1 E., Sec. 29); thence southerly along SW Stafford Road to SW Mountain Road; thence southerly along SW Mountain Road to SW Hoffman Road; thence easterly along SW Hoffman Road to the intersection of SW Hoffman Road, SW Petes Mountain Road and SW Riverwood Drive; thence due east to the Willamette River; thence northerly along the Willamette River to the mouth of the Tualatin River; thence northwesterly along the Tualatin River to SW Borland Road (a.k.a. Willamette Falls Drive); thence northwesterly along SW Borland Road to SW Ek Road; thence westerly along SW Ek Road to SW Stafford Road, to the point of beginning.

(b) All new, altered, deepened or converted wells constructed in the Petes Mountain Area shall be cased and sealed in accordance with OAR 690, Division 210 with the following additional requirements:

(A) All new wells shall have a nominal minimum well casing diameter of at least 6 inches.

(B) All wells shall have a minimum 3/4-inch diameter dedicated measuring tube installed at the time of pump installation, pump repair or pump replacement (See Figure 200-5 and OAR 690-215-0200).

(C) Alternatives to the special area standards shall be approved only if it can be demonstrated that the alternative techniques proposed to be used are as effective as the techniques required in subsection (2)(b) above. Such alternatives require prior written approval by the Department. In addition, follow-up testing may be required by the Department to insure the effectiveness of the alternative technique.

(D) Except as they may conflict with subsection (2)(b), all other provisions of Oregon Administrative Rules for Well Construction and Maintenance Standards apply.

(E) This rule is applicable to wells for which pump installation, repair or replacement began on or after July 1, 2008.

(F) This special area standard may be revised at a future date when additional information and analysis is provided from other agencies including the Oregon Department of Environmental Quality.

(3) Special Area Standards for the Construction, Conversion and Maintenance of Water Supply Wells for the "Eola Hills Ground Water Limited Area," Polk and Yamhill Counties.

(a) As used in this rule and illustrated in Figure 200-7, "The Eola Hills Ground Water Limited Area" includes all or portions of Sections 4 through 9, 16 through 21, and 29 through 32, Township 6 South, Range 3 West, Willamette Meridian; Sections 3 through 10, 15 through 22, 28, 29 and 30, Township 7 South, Range 3 West, Willamette Meridian; Sections 1 through 5, 8 through 17, 20 through 29, and 32 through 36, Township 6 South, Range 4 West, Willamette Meridian; and Sections 1 through 30, Township 7 South, Range 4 West, Willamette Meridian. The boundary of the Eola Hills

area is as follows: Beginning at the intersection of the south line of Township 5 South and U.S. Highway 99W, thence east along the township line to the Willamette River, thence southerly to Oregon State Highway 22, thence westerly to U.S. Highway 99W, thence northerly along Hwy 99W to the point of beginning.

(b) All new, altered, deepened or converted wells constructed in the Eola Hills Ground Water Limited Area shall be cased and sealed in accordance with OAR 690, Division 210 with the following additional requirements:

(A) All new wells shall have a nominal minimum well casing diameter of at least 6 inches.

(B) All wells, in all aquifers, shall have a minimum 3/4-inch diameter dedicated measuring tube installed at the time of pump installation, pump repair or pump replacement (See Figure 200-5 and OAR 690-215-0200).

(C) All new and deepened wells developing water from basalt in the Eola Hills Ground Water Limited Area shall be limited to one aquifer and shall be continuously cased and continuously sealed to within 100 feet of the bottom of the hole.

(c) Alternatives to the special area standards shall be approved only if it can be demonstrated that the alternative techniques proposed to be used are as effective as the techniques required in subsection (3)(b) above. Such alternatives require prior written approval by the Department. In addition, follow-up testing may be required by the Department to insure the effectiveness of the alternative technique.

(d) Except as they may conflict with subsection (3)(b), all other provisions of Oregon Administrative Rules for Well Construction and Maintenance Standards apply.

(e) This rule is applicable to wells for which pump installation, repair or replacement began on or after July 1, 2008.

(4) Special Area Standards for New, Altered, Deepened or Converted Water Supply Wells in the "Mosier Area," Wasco County.

(a) As used in this rule and illustrated in Figure 200-8, the "Mosier Area" includes the area located in Section 36 Township 3 North, Range 11 East, Willamette Meridian; and Sections 31, 32, 33 and 34 Township 3 North, Range 12 East, Willamette Meridian; and Sections 1, 2, 3, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25, 26, 27, 34, 35 and 36 Township 2 North, Range 11 East, Willamette Meridian; and Sections 3, 4, 5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 27, 28, 29, 30, 31, 32 and 33 Township 2 North, Range 12 East, Willamette Meridian. Beginning at a point of intersection of the Wasco County, Hood River County, State of Oregon and State of Washington lines; thence south along the Wasco and Hood River County line to the Southwest corner of Section 34, Township 2 North, Range 11 East of the Willamette Meridian; thence east to the Southeast corner of Section 32, Township 2 North, Range 12 East of the Willamette Meridian; thence north to the East 1/4 corner of Section 32; thence east to the Southeast corner of the SW1/4 of the NW1/4 of Section 33; thence north to the Southeast corner of the NW1/4 of the NW1/4 of Section 33; thence east to the Southeast corner of the NE1/4 of the NW1/4 of Section 33; thence north to the North 1/4 corner of Section 33; thence east to the Southeast corner of the SW1/4 of the SE1/4 of Section 28; thence north to the Southeast corner of the NW1/4 of the SE1/4 of Section 28; thence east to Southeast corner of the NW1/4 of the SW1/4 of Section 27; thence north to the Southeast corner of the SW1/4 of

the NW1/4 of Section 27; thence east to the Center 1/4 corner of Section 27; thence north to Southeast corner of the NE1/4 of the NW1/4 of Section 27; thence east to the Southeast corner of the NW1/4 of the NE1/4 of Section 27; thence north to the Northeast corner of the NW1/4 of the NE1/4 of Section 27; thence east to the SE corner of section 22; thence north to the East 1/4 corner of Section 22; thence east to the Center 1/4 of Section 23; thence north to the Southeast corner of the NE1/4 of the NW1/4 of Section 23; thence east to the Southeast corner of the NE1/4 of the NE1/4 of Section 23; thence north to the Northwest corner of Section 24; thence east to the North 1/4 corner of Section 24; thence north to the North 1/4 corner of Section 13; thence west to the Northeast corner of Section 15; thence north to the Oregon and Washington State line; thence west along the Oregon-Washington State line to the point of beginning.

(b) Well constructors shall provide at least 10 calendar days notice to the Department prior to the start of construction, alteration, deepening or conversion on any new or existing well in the "Mosier Area", in one of two ways:

(A) A Start Card submitted electronically at least ten (10) calendar days prior to the start of construction, alteration, deepening or conversion; or

(B) A Start Card mailed, faxed or hand delivered and received by the Department in Salem at least ten (10) calendar days prior to the start of construction, alteration, deepening or conversion.

(c) In cases where the additional notice requirement cannot be met the well constructor shall notify the Department by fax, telephone or e-mail prior to the start of construction, alteration, deepening or conversion. Department approval is required to proceed. Approval shall be either, verbal, written or electronic.

(d) All new and deepened water supply wells developing water from the Columbia River Basalt Group in the "Mosier Area", as described in (a) above, shall be limited to one aquifer and shall be constructed in accordance with OAR 690, division 210 with the following additional requirements:

(A) All new wells shall have a nominal minimum well casing diameter of at least 6 inches.

(B) The well constructor shall provide the following information to the Department so that a case and seal depth can be determined. The well shall not be permanently cased and sealed prior to consultation with the Department:

(i) A rough log that describes the kind and nature of the material in each formation penetrated, with at least one entry for each change of formation, the thickness of aquifers and available static water level measurements; and

(ii) Such additional information as required by the Department.

(e) Alternatives to the special area standards shall be approved only if it can be demonstrated that the alternative techniques proposed to be used are as effective as the techniques required in (d) above. Such alternatives require prior written approval by the Department. In addition, follow-up testing may be required by the Department to ensure the effectiveness of the alternative technique.

(f) All wells, in all aquifers, shall have a minimum 3/4-inch diameter dedicated measuring tube installed at the time of pump installation, pump repair or pump replacement (See Figure 200-5 and OAR 690-215-0200).

(g) Except as they may conflict with (d) above, all other provisions of Oregon Administrative Rules for Well Construction and Maintenance Standards apply.

[ED. NOTE: Exhibits referenced are not included in rule text. Click here for PDF copy of exhibit(s).]

Stat. Auth.: ORS 183, 537.780, 536.027, 536.090, 540
Stats. Implemented: ORS 183, 536, 537.505 - 537.795, 537.780(1) & 540
Hist.: WRD 2-2004, f. & cert. ef. 4-1-04; WRD 2-2008, f. 6-18-08, cert. ef. 7-1-08; WRD 5-2015, f. & cert. ef. 7-1-15; WRD 8-2016, f. & cert. ef. 9-6-16

690-200-0030
Public Safety

No water supply well shall be constructed, maintained, or abandoned in such a manner as to constitute a health threat, or health hazard or a menace to public safety.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79, Renumbered from 690-060-0010 by WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 21-1990, f. & cert. ef. 12-14-90; WRD 7-2001, f. & cert. ef. 11-15-01

690-200-0040
Wells Cannot be Used for Disposal of Contaminants

No water supply well shall be used as a disposal pit for sewage, industrial waste, or other materials that could contaminate the ground water supply.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; Renumbered from 690-062-0025 by WRD 13-1983, f. 10-7-86, ef. 11-1-86; WRD 7-2001, f. & cert. ef. 11-15-01

690-200-0041
Water Used Must be Potable

All water used in the construction, alteration, repair or abandonment of water supply wells shall be potable.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; Renumbered from 609-210-0040 by WRD 7-2001, f. & cert. ef. 11-15-01

690-200-0042
Organic Materials

Organic materials, which foster or promote undesired organic growth or have the potential to degrade water quality shall not be employed in the construction of a water supply well. This includes, but is not limited to, brans, hulls, grains, starches, and proteins.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0076; WRD 7-1988, f. & cert. ef. 6-29-88; Renumbered from 690-210-0050 by WRD 7-2001, f. & cert. ef. 11-15-01

690-200-0043
Commingling of Waters

A water supply well shall not be constructed in a manner that allows commingling or leakage of ground water by gravity flow or artesian pressure from one aquifer to another. See definition of aquifer.

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795
Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0061; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; Renumbered from 690-210-0080 by WRD 7-2001, f. & cert. ef. 11-15-01

690-200-0046
Perched Ground Water

Wells drawing water from perched zones must be constructed to prevent the waste of this type of ground water. (See Figure 200-2)

[ED. NOTE: Figures referenced 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 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0059; Renumbered from 690-210-0090 by WRD 7-2001, f. & cert. ef. 11-15-01

690-200-0047
Unattended Wells

All wells, when unattended during construction, shall be covered to protect public health and safety.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0007; Renumbered from 690-210-0110 by WRD 7-2001, f. & cert. ef. 11-15-01

690-200-0048
Well Identification Label

(1) Within 30 days of completion of well construction, conversion, or alteration, the constructor shall permanently affix a well identification label to the wellhead in an accessible and visible location in the following manner:

(a) Labels shall be at least six inches above ground surface and shall be permanently attached to the outside of the casing using a stainless steel band, stainless steel rivets, or screws; and

(b) Labels shall be attached in such a manner as to be easily readable upon inspection.

(2) Identification labels may not be attached to pumps, pump equipment, water delivery lines, or well caps.

(3) The identification label number shall be recorded on the well report at the time the report is submitted.

(4) Identification labels shall be furnished by the Department.

(5) If a well identification label is already affixed to an existing well that is being altered, converted, or abandoned, the constructor shall record the identification label number on the well report.

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

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540 Hist.: WRD 7-2001, f. & cert. ef. 11-15-01; WRD 8-2016, f. & cert. ef. 9-6-16

690-200-0050
Definitions

The Water Resources Commission uses the definitions of the words listed below in the administration and enforcement of Oregon's Ground Water Law and the Rules and Regulations for the Construction and Alteration of Wells. No other definitions of these same words apply:

(1) "Abandonment, Permanent" means to remove a well from service by completely filling it in such a manner that vertical movement of water within the well bore and within the annular space surrounding the well casing, is effectively and permanently prevented. If a portion of a well is to be abandoned in order to prevent commingling, waste, or loss of artesian pressure, the

abandonment shall conform with the requirements of OAR Chapter 690, Division 220 for water supply wells. This term is synonymous with "decommission."

(2) "Abandonment, Temporary" means to remove a drilling machine from a well site after completing or altering a well provided the well is not immediately put into service, or to remove a well from service with the intent of using it in the future.

(3) "Access Port" means a minimum 1/2-inch tapped hole and plug, a 1/2-inch capped pipe welded onto the casing in the upper portion of a water supply well, or a dedicated measuring tube to permit unobstructed entry to determine the water level in the well at any time.

(4) "Air Gap" means a complete physical break between the outlet end of the discharge pipe or other conduit and the discharged substance. The break shall be at least twice the inside diameter of the pipe or conduit. (Back-siphon prevention)

(5) "Airline" means a water level measuring device consisting of a pressure gauge attached to an airtight line or pipe of known length, within the water supply well bore, extending from land surface to below the pumping level. The device will allow the water level to be computed by measuring the stable air pressure remaining in the line after completely purging water from within the line.

(6) "Air/Vacuum Relief Valve" means a device to automatically relieve or break vacuum. (Back-siphon prevention).

(7) "Altering a Well" means the deepening, hydrofracturing, re-casing, perforating, re-perforating, installation of packers or seals, and any other material change in the design or construction of a well. Material changes include but are not limited to casing installation or modification including casing extensions, installation or modification of liner pipe, reaming or under reaming of the borehole, pitless unit installation or re-sealing except for re-sealing performed during pitless adapter installation.

(8) "Annular Space" means the space between the drillhole wall and the outer well casing.

(9) "Aquifer" means a geologic formation, group of formations, or part of a formation that contains saturated and permeable material capable of transmitting water in sufficient quantity to supply wells or springs and that contains water that is similar throughout in characteristics such as potentiometric head, chemistry, and temperature (see Figure 200-2).

(10) "Artesian Aquifer" means a confined aquifer in which groundwater is under sufficient head to rise above the level at which it was first encountered, whether or not the water flows at land surface. If the water level stands above land surface, the well is a flowing artesian well (see Figure 200-2).

(11) "Artesian Water Supply Well" means a water supply well in which ground water is under sufficient pressure to rise above the level at which it was first encountered, whether or not the water flows at land surface. If the water level stands above land surface the well is a flowing

artesian water supply well.

(12) "Automatic Low-Pressure Drain" means a self-activating device designed and constructed to intercept incidental leakage and drain that portion of an irrigation pipeline or any other method of conveyance whose contents could potentially enter the water supply when operation of the irrigation system pumping plant fails or is shut down. (Back-siphon prevention).

(13) "Back-Siphon Prevention Device" means a safety device used to prevent water pollution or contamination by preventing flow of a mixture of water and/or chemicals in the opposite direction of that intended. (Back-siphon prevention)

(14) "Bored Well" means a well constructed with the use of earth augers turned either by hand or by power equipment.

(15) "Buried Slab Type Well" means a dug well in which well casing is used to case the upper hole. A slab, sealed with cement grout, is placed between the upper hole and lower drillhole, and the remainder of the annulus is filled with concrete.

(16) "Casing" means the outer tubing, pipe, or conduit, welded or thread coupled, and installed in the borehole during or after drilling to support the sides of the well and prevent caving. Casing can be used, in conjunction with proper seal placement, to shut off water, gas, or contaminated fluids from entering the hole, and to prevent waste of ground water.

(17) "Casing Seal" means the water tight seal established in the well bore between the well casing and the drillhole wall to prevent the inflow and movement of surface water or shallow ground water in the well annulus, or to prevent the outflow or movement of water under artesian or hydrostatic pressures. This term is synonymous with “annular seal” or “surface seal”.

(18) "Check Valve" means a certified device designed and constructed to close a water supply pipeline, chemical injection line, or other conduit in a chemigation system to prevent reverse flow in that line. (Back-siphon prevention).

(19) "Chemigation" means the method of applying agricultural chemicals and fertilizer through an irrigation system.

(20) "Clay" means a fine-grained, inorganic material having plastic properties and with a predominant grain size of less than 0.002 mm.

(21) "Commission" means the Oregon Water Resources Commission.

(22) "Committee" means the Oregon Ground Water Advisory Committee created by ORS 536.090.

(23) "Community Well" means a water supply well, whether publicly or privately owned, which serves or is intended to serve more than three connections for residences or other connections for the purpose of supplying water for drinking, culinary, or household uses.

(24) "Confined Animal Feeding or Holding Area" means the concentrated confined feeding or holding of animals or poultry, including but not limited to horse, cattle, sheep, swine, and dairy confinement areas, slaughterhouse or shipping terminal holding pens where the animal waste is allowed to build up on the ground. Pastures and areas adjacent to buildings where animals and animal waste is confined by a physical barrier such as concrete are exempt.

(25) "Confining Interval "means a low permeability material such as clay or solid, unfractured, consolidated rock immediately overlying an artesian (confined) aquifer (see Figure 200-2).

(26) "Consolidated Formation" means materials that have become firm through natural rock-forming processes. It includes, but is not limited to, such materials as basalt, sandstone, shale, hard claystone, and granite.

(27) "Contamination" means an impairment of water quality by chemicals, radionuclides, biologic organisms or other extraneous matter whether or not it affects the potential or intended beneficial use of water.

(28) "Continuing Education" means that education required as a condition of licensure under ORS 537.747, to maintain the skills necessary for the protection of ground water, the health and general welfare of the citizens of Oregon and the competent practice of the construction, alteration, abandonment, conversion, and maintenance of water supply wells, monitoring wells, and geotechnical holes.

(29) "Continuing Education Committee" means the Well Constructor Continuing Education Committee authorized under Chapter 496, Oregon Laws 2001 (ORS 537.765).

(30) "Continuing Education Course" means a formal offering of instruction or information to licensee’s that provides continuing education credits.

(31) "Continuing Education Credit" (CEC) means a minimum of 50 minutes of instruction or information approved by the Continuing Education Committee.

(32) "Converting" a well means changing the use of an existing well or hole not previously used to either withdraw or monitor water such that the well or hole can be used to either withdraw or monitor water.

(33) "Deepening a well" means extending the well bore of an existing well through previously undisturbed native material. Deepening is a type of alteration.

(34) "Department" means the Oregon Water Resources Department.

(35) "Director" means the Director of the Department or the Director's authorized representatives.

(36) "Documentation of Completion" means written evidence or documentation demonstrating

attendance and completion of a continuing education course, including but not limited to: a certificate of completion, diploma, transcript, certified class roster, or other documentation as approved by the Continuing Education Committee.

(37) "Domestic Well" means a water supply well used to serve no more than three residences for the purpose of supplying water for drinking, culinary, or household uses, and which is not used as a public water supply.

(38) "Drawdown" means the difference in vertical distance between the pumping level and the static water level in a well.

(39) "Drive Point Well" means a well constructed by driving into the ground a well-point fitted to the end of a pipe section or series of pipe sections.

(40) "Dug Well" means a well in which the excavation is made by the use of digging equipment such as backhoes, clam shell buckets, or sand buckets. (See Hand dug well).

(41) "Excavation" means a free-standing cavity with greater width than depth constructed in the earth's surface, which has a primary purpose other than seeking water or water quality monitoring.

(42) "Figure", when used herein, refers to an illustration and is made a part of the primary article and section by reference.

(43) "Filter Pack Well" means a well in which the area immediately surrounding the well screen or perforated pipe within the water-producing zone is filled with graded granular material.

(44) "Geologic Formation" means an igneous, sedimentary, or metamorphic material that is relatively homogeneous and is sufficiently recognized as to be distinguished from the adjacent material. The term is synonymous with "formation."

(45) "Geologist" means an individual registered by the State of Oregon to practice geology.

(46) "Geotechnical hole" means a hole constructed to collect or evaluate subsurface data or information, monitor movement of landslide features, or to stabilize or dewater landslide features. Geotechnical holes are not monitoring wells or water supply wells as defined below. Various classes and examples of geotechnical holes are listed in OAR 690-240-0035(6)-(9).

(47) "Grout" means approved cement, concrete, or bentonite sealing material used to fill an annular space of a well or to abandon a well.

(48) "Grout Pipe" means a pipe, which is used to place grout at the bottom of the sealing interval of a well.

(49) "Hand dug well" means a well in which the excavation is only made by the use of picks, shovels, spades, or other similar hand operated implements. (See Dug Well).

(50) "Hazardous Materials Training" means training as defined by OAR 437-002-0100 Adoption by Reference Subdivision H Hazardous Materials 1910.120 Hazardous Waste Operations and Emergency Response.

(51) "Hazardous Waste" means a substance as defined by ORS 466.005.

(52) "Hazardous Waste Disposal Site" means a geographical site in which or upon which hazardous waste is disposed.

(53) "Hazardous Waste Storage Site" means the geographical site upon which hazardous waste is stored.

(54) "Hazardous Waste Treatment Site" means the geographical site upon which or a facility in which hazardous waste is treated.

(55) "Health Hazard" means a condition where there are sufficient concentrations of biological, chemical, or physical, including radiological, contaminants in the water that are likely to cause human illness, disorders, or disability. These include but are not limited to, naturally occurring substances, pathogenic viruses, bacteria, parasites, toxic chemicals, and radioactive isotopes. Sufficient concentrations of a contaminant include but are not limited to contaminant levels set by the Oregon Department of Environmental Quality and Oregon Health Division.

(56) "Health Threat" means a condition where there is an impending health hazard. The threat may be posed by, but not limited to: a conduit for contamination, or a well affecting migration of a contaminant plume, or the use of contaminated water. A well in which the construction is not verified by a water supply well report or geophysical techniques may be considered a conduit for contamination in certain circumstances. Those circumstances include, but are not limited to: an unused and neglected well or a well for which no surface seal was required. A well in which the casing seal, sanitary seal, or watertight cap has failed, or was inadequately installed may be considered a conduit for contamination.

(57) "Horizontal Well" means a well that intentionally deviates more than 20 degrees from true vertical at any point.

(58) "Hydrofracturing" means the use of high pressure liquid, sand, packers or other material to open or widen fractures in consolidated formations for the purpose of increasing well yield.

(59) "Hydrologic Cycle" is the general pattern of water movement by evaporation from sea to atmosphere, by precipitation onto land, and by return to sea under influence of gravity.

(60) "Inspection Port" means an orifice or other viewing device from which the low-pressure drain and check valve may be observed.

(61) "Jetted Well" means a well in which the drillhole excavation is made by the use of a high velocity jet of water.

(62) "Leakage" means movement of surface and/ or subsurface water around the well casing or seal.

(63) "Liner Pipe" means the inner tubing, pipe, or conduit installed inside the well casing or lower well bore. The liner pipe is used to protect against caving formations and is not permanently affixed to the drillhole wall or casing.

(64) "Lower Drillhole" means that part of the well bore extending below the casing seal interval in a well.

(65) "Mineralized Water" means any naturally occurring ground water containing an amount of dissolved chemical constituents limiting the beneficial uses to which the water may be applied.

(66) "Monitoring Well" means a well designed and constructed to determine the physical (including water level), chemical, biological, or radiological properties of ground water.

(67) "Monitoring Well Constructor" means any person who has a current water well constructor's license with a monitoring well endorsement issued in accordance with ORS 537.747(3).

(68) "Monitoring Well Constructor's License" means a Water Well Constructor's License with a monitoring well endorsement issued in accordance with ORS 537.747(3).

(69) "Municipal or Quasi-Municipal Well" means a water supply well owned by a municipality or nonprofit corporation that may be used as a community or public water supply.

(70) "Order" means any action satisfying the definition given in ORS Chapter 183 or any other action so designated in ORS 537.505 to 537.795.

(71) "Other Hole" means a hole other than a water supply well, a monitoring well, or geotechnical hole, however constructed, in naturally occurring or artificially emplaced earth materials, through which ground water can become contaminated. Holes constructed under ORS Chapters 517, 520, and 522 are not subject to these rules. Other holes are regulated under OAR 690-240. Examples of other holes are listed in 690-240-0030.

(72) "Perched Groundwater" means ground water held above the regional or main water table by a less permeable underlying earth or rock material (see Figure 200-2).

(73) "Permeability" means the ability of material to transmit fluid, usually described in units of gallons per day per square foot of cross-section area. It is related to the effectiveness with which pore spaces transmit fluids.

(74) "Person" includes individuals, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the Federal Government and any agencies thereof.

(75) "Petcock Valve" is a valve used to contain pressure which when opened will drain the line or pipe.

(76) "Petroleum" means gasoline, crude oil, fuel oil, diesel oil, lubricating oil, oil sludge, oil refuse, and crude oil fractions and refined petroleum fractions, including gasoline, kerosene, heating oils, diesel fuels, and any other petroleum-related product or waste or fraction thereof that is liquid at a temperature of 60 degrees Fahrenheit and a pressure of 14.7 pounds per square inch absolute. "Petroleum" does not include any substance identified as a hazardous waste under 40 CFR Part 261.

(77) "Piezometer" means a type of monitoring well designed solely to obtain ground water levels. Piezometers are prohibited in areas of known or reasonably suspected contamination. This term is synonymous with "observation well"(See OAR 690-240).

(78) "Pitless Adapter" means a commercially manufactured device designed for attachment to one or more openings through a well casing, which will permit water service pipes to pass through the wall of a well casing or extension thereof and prevent entrance of contaminants into the well or ground water. (Note: Unhydrated bentonite shall be installed at least one and one-half inches thick around the casing in any disturbed seal interval during pitless adapter installation).

(79) "Pitless Unit" means a commercially manufactured assembly which extends the upper end of the well casing to above grade, constructed and installed so as to prevent the entrance of contaminants into the well and to protect the ground water supply, conduct water from the well, and provide full access to the well and water system parts therein. (Note: Unhydrated bentonite shall be installed at least one and one-half inches thick around the casing in any disturbed seal interval during pitless unit installation).

(80) "Porosity" means the ratio of the volume of voids in the geologic formation being drilled to the overall volume of the material without regard to size, shape, interconnection, or arrangement of openings.

(81) "Potable Water" means water, which is sufficiently free from biological, chemical, physical, or radiological impurities so that users thereof will not be exposed to or threatened with exposure to disease or harmful physiological effects.

(82) "Potentiometric Surface" means the level to which water will rise in tightly cased artesian wells (see Figure 200-2).

(83) "Pressure Grouting" means a process by which grout is confined within the drillhole or casing by the use of retaining plugs or packers and by which sufficient pressure is applied to drive the grout slurry into the annular space or zone to be grouted.

(84) "Professional" means any person licensed or registered by the State of Oregon to construct monitoring wells, water supply wells, or practice geology or civil engineering.

(85) "Public-at-Large" means a person not actively engaged in the well industry.

(86) "Public Water System" means a system for the provision to the public of piped water for human consumption, if such system has more than three service connections or supplies water to a public or commercial establishment that operates a total of at least 60 days per year, and that is used by ten or more individuals per day. Public water system also means a system for the provision to the public of water through constructed conveyances other than pipes to at least 15 service connections or regularly serves at least 25 individuals daily at least 60 days of the year. A public water system is either a "Community Water System," a "Transient Non-Community Water System," a "Non-Transient Non-Community Water System" or a "State Regulated Water System."

(87) "Public Well" means a water supply well, whether publicly or privately owned, other than a municipal well, where water is provided for or is available through the single user for public consumption. This includes, but is not limited to, a school, a farm labor camp, an industrial establishment, a recreational facility, a restaurant, a motel, or a group care home.

(88) "Pumping Level" means the level of the water surface in a well while it is being pumped or bailed.

(89) "Pump Test" means the procedure involving pumping water for a specified period of time to determine the yield characteristics of an aquifer.

(90) "Refusal to Renew" means a provision in an order, or as allowed by ORS 537.747, that prohibits renewal of a well constructor's license, for a specified term not to exceed one year from the expiration date of the current license.

(91) "Remediation Well" means a well used for extracting contaminates and/or contaminated ground water from an aquifer. This term is synonymous with "extraction well" and "recovery well."

(92) "Respondent" means the person against whom an enforcement action is taken.

(93) "Responsible Party" means the person or agency that is in charge of construction or maintenance and is either in violation as specified in a notice of violation or who may benefit from that violation.

(94) "Rough Drilling Log" means a record kept on the well site of the information needed to complete the well report for the well being constructed.

(95) "Revoke" means termination of a well constructor's license.

(96) "Sand" means a material having a prevalent grain size ranging from 2 millimeters to 0.06 millimeters.

(97) "Sanitary Seal" means a tight fitting properly sized threaded, welded, or gasketed cap placed on the top of the permanent well casing to prevent entry of water and foreign material.

(98) "Sealant": See Grout.

(99) "Silt" means an unconsolidated sediment composed predominantly of particles between 0.06 mm and 0.002 mm in diameter.

(100) "Slope Stability Geotechnical Hole" means a geotechnical hole excavated, drilled or bored for studying and/or monitoring movement of landslide features, including water levels, or other mass-wasting features to detect zones of movement and establish whether movement is constant, accelerating, or responding to remedial measures. Hole(s) excavated, drilled or bored for the purpose of slope remediation or stabilization shall be considered a slope stability geotechnical hole. Slope stability geotechnical holes are not monitoring wells, piezometers, or water supply wells.

(101) "Sponsor" means an institution, professional organization, individual, or business that offers continuing education courses to licensees. This term is synonymous with provider.

(102) "Static Water Level" means the stabilized level or elevation of water surface in a well not being pumped.

(103) "Sump" means a hole dug to a depth of ten feet or less with a diameter greater than ten feet in which ground water is sought or encountered.

(104) "Suspension" means the temporary removal of the privilege to construct wells under an existing license for a period of time not to exceed one year.

(105) "System Interlock" means an interlocking mechanism used to link irrigation pumps and chemical injection units, other pumps, or supply tanks so designed that in the event of irrigation pump malfunction or failure, shutdown of the chemical injection units will occur. (Back-siphon prevention).

(106) "Unconsolidated Formation" means naturally occurring, loosely cemented, or poorly indurated materials including clay, sand, silt, and gravel.

(107) "Underground Injection" means the emplacement or discharge of fluids to the subsurface.

(108) "Underground Injection System" means a well, improved sump, sewage drain hole, subsurface fluid distribution system, or other system or ground water point source used for the emplacement or discharge of fluids.

(109) "Upper Oversize Drillhole" means that part of the well bore extending from land surface to the bottom of the surface seal interval.

(110) "Violation" means an infraction of any statute, rule, standard, order, license, compliance schedule, or any part thereof and includes both acts and omissions.

(111) "Water Supply Well" means a well, other than a monitoring well, that is used to beneficially withdraw or beneficially inject ground or surface water. Water supply wells include, but are not limited to, community, dewatering, domestic, irrigation, industrial, municipal, and aquifer storage and recovery wells.

(112) "Water Supply Well Constructor" means any person who has a current water well constructor's license with a water supply well endorsement issued in accordance with ORS 537.747(3).

(113) "Water Supply Well Constructor's License" means a Water Well Constructor's License with a water supply well endorsement issued in accordance with ORS 537.747(3).

(114) "Water Supply Well Drilling Machine" means any power-driven driving, jetting, percussion, rotary, boring, digging, augering machine, or other equipment used in the construction or alteration of water supply wells.

(115) "Water Table" means the upper surface of an unconfined water body, the surface of which is at atmospheric pressure and fluctuates seasonally. The water table is defined by the levels at which water stands in wells that penetrate the water body (see Figure 200-2).

(116) "Water Well Constructor's License" means a license to construct, alter, deepen, abandon or convert wells issued in accordance with ORS 537.747(3). Endorsements are issued to the license and are specific to the type of well a constructor is qualified to construct, alter, deepen, abandon or convert.

(117) "Well" means any artificial opening or artificially altered natural opening, however made, by which ground water is sought or through which ground water flows under natural pressure, or is artificially withdrawn or injected. This definition shall not include a natural spring, or wells drilled for the purpose of exploration or production of oil or gas. Prospecting or exploration for geothermal resources as defined in ORS 522.005 or production of geothermal resources derived from a depth greater than 2,000 feet as defined in 522.055 is regulated by the Department of Geology and Mineral Industries.

(118) “Wet Soil Monitoring Hole” means a shallow geotechnical hole set vertically in the ground and constructed to a depth of three and one-half feet or less for studying and/or monitoring the upper portion of the shallowest water-bearing unit within and immediately below the surface soil horizon.

[ED. NOTE: Figures referenced are available from the agency]

Stat. Auth.: ORS 536.027, 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795

Note: These rules were filed with the Office of the Secretary of State and took effect on 9/6/2016.
The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2)(a) when published by the Secretary of State.

Hist.: WRD 9, f. & ef. 12-9-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 12-1982, f. & ef. 12-14-82; Renumbered from 690-060-0050 & 690-064-0000 by WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 21-1990, f. & cert. ef. 12-14-90; WRD 1-1991, f. & cert. ef. 2-8-91; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 2-1995, f. 5-17-95, cert. ef. 7-1-95; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 1-2003, f. & cert. ef. 3-14-03; WRD 4-2004, f. & cert. ef. 6-15-04; WRD 2-2006, f. & cert. ef. 6-20-06; WRD 2-2008, f. 6-18-08, cert. ef. 7-1-08; WRD 3-2008, f. 12-22-08, cert. ef. 1-2-09; WRD 5-2015, f. & cert. ef. 7-1-15; WRD 8-2016, f. & cert. ef. 9-6-16

APPENDIX 1

Additional Requirements by Other State Agencies of Oregon

In the administration of ORS 537.505 to 537.795, the Director of the Water Resources Department has statutory authority under the provisions of ORS 537.780 "to prescribe and enforce general standards for the construction and maintenance of wells and their casings, fittings, valves, and pumps..." Other agencies of the state have statutory responsibilities that relate either directly or indirectly to the construction and operation of public water supply systems and their source of water supply. These agencies and their responsibilities are listed as follows:

OREGON HEALTH AUTHORITY 800 NE Oregon Street Portland, OR 97232 (serving more than three single residents) www.oregon.gov/OHA/Pages/index.aspx	ORS Chapter 448	Municipal Water Supply Systems Public Water Supply Systems Community Water Supply Systems Source Water Protection
BUILDING CODES DIVISION 1535 Edgewater NW Salem, OR 97304-4635 www.cbs.state.or.us/extemal/bcd	ORS Chapter 446	Electrical and Plumbing for all Commercial Enterprises Mobile Home Park Water Supply Systems
OREGON PUBLIC UTILITY COMMISSION 550 Capitol St. NE Salem, OR 97301-2551 www.puc.state.or.us/	ORS Chapter 757	Private Owners (water supply systems, 200 homes or more)
DEPARTMENT OF ENVIRONMENTAL QUALITY 811 SW Sixth Ave. Portland, OR 97204-1390 www.oregon.gov/deq	ORS Chapter 468	Water Quality Monitoring Underground Injection Systems Source Water Protection
SECRETARY OF STATE CORPORATION DIVISION Business Services Division Public Service Bldg., Suite 180 Salem, OR 97310 www.sos.state.or.us		Business Registry for Water Districts

APPENDIX 1- CONTINUED

All wells constructed in Oregon, including those to serve as a source of ground water to municipal, community, public, or public utility water supply systems, must be constructed in accordance with the rules and regulations prescribing general standards for the construction and maintenance of wells in Oregon (OAR 690 Divisions 205, 210, 215, 220 and 240). Additional construction standards for water supply systems may be required by the above listed agencies. Such rules and regulations generally include the source of water supply to the systems and may affect well construction requirements. Copies of the various agency rules may be obtained by contacting the responsible agency. Well constructors planning to construct a well as a source of water supply for any of the above systems are advised to contact the responsible agency prior to the beginning of well construction.

Special Groundwater Control Areas

OAR 690-200-0027

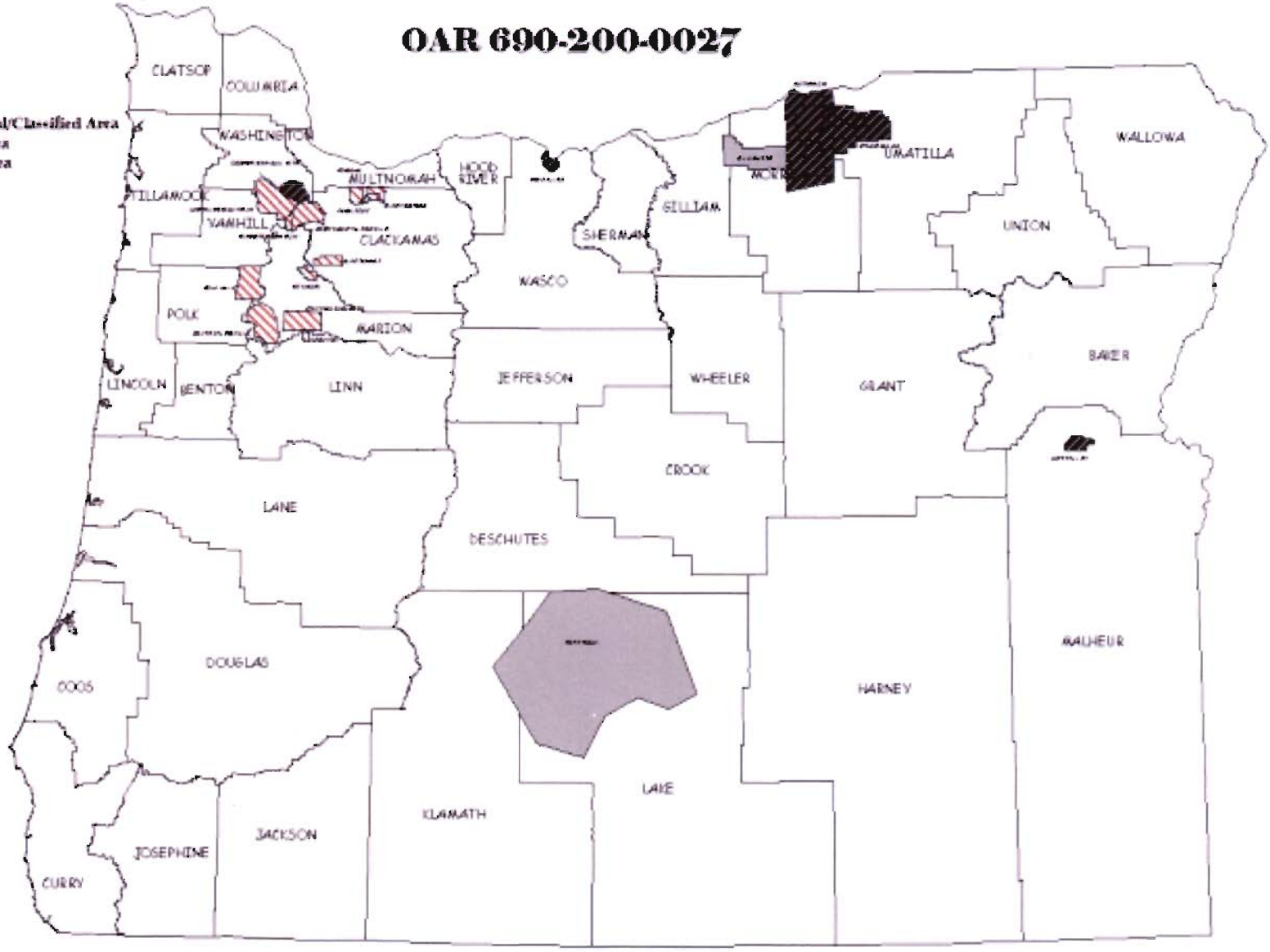


Figure 200-1

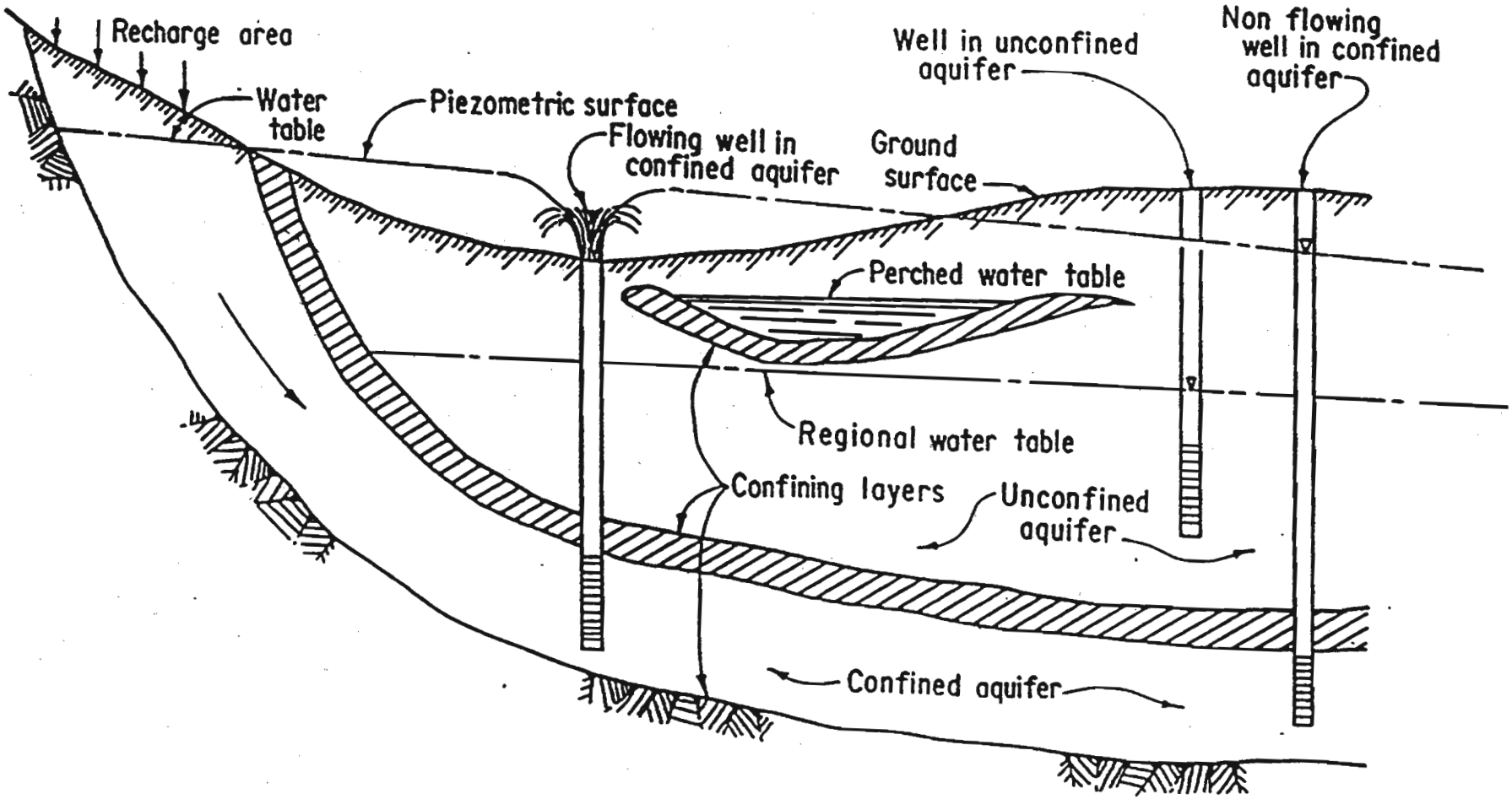


FIGURE 1–2.—Types of aquifers. 103–D–1401.

Figure 200-2

FIGURE 200-3

Special Area Standards
"Lakeview Area"
OAR 690-200-0028

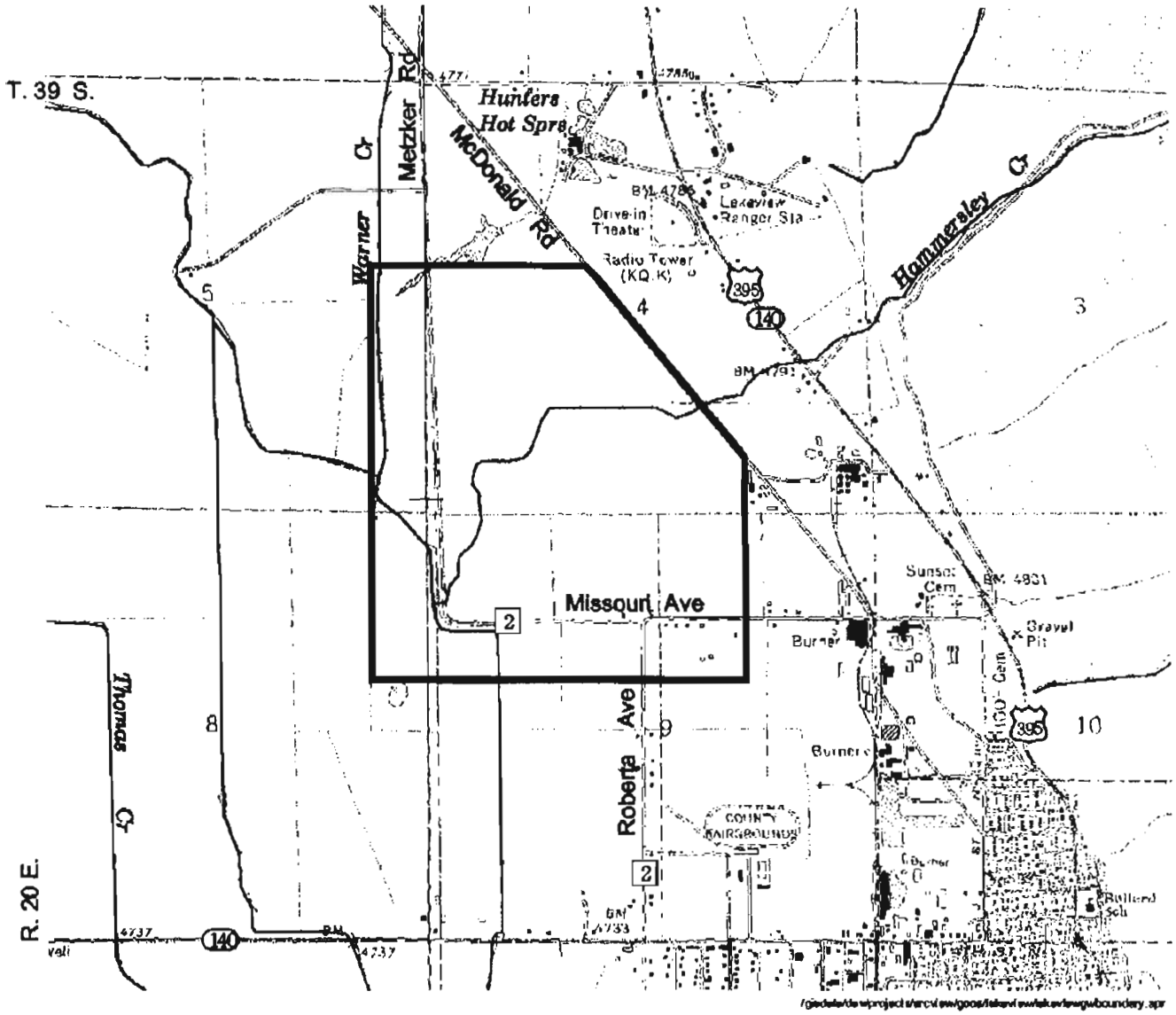


Figure 200-4

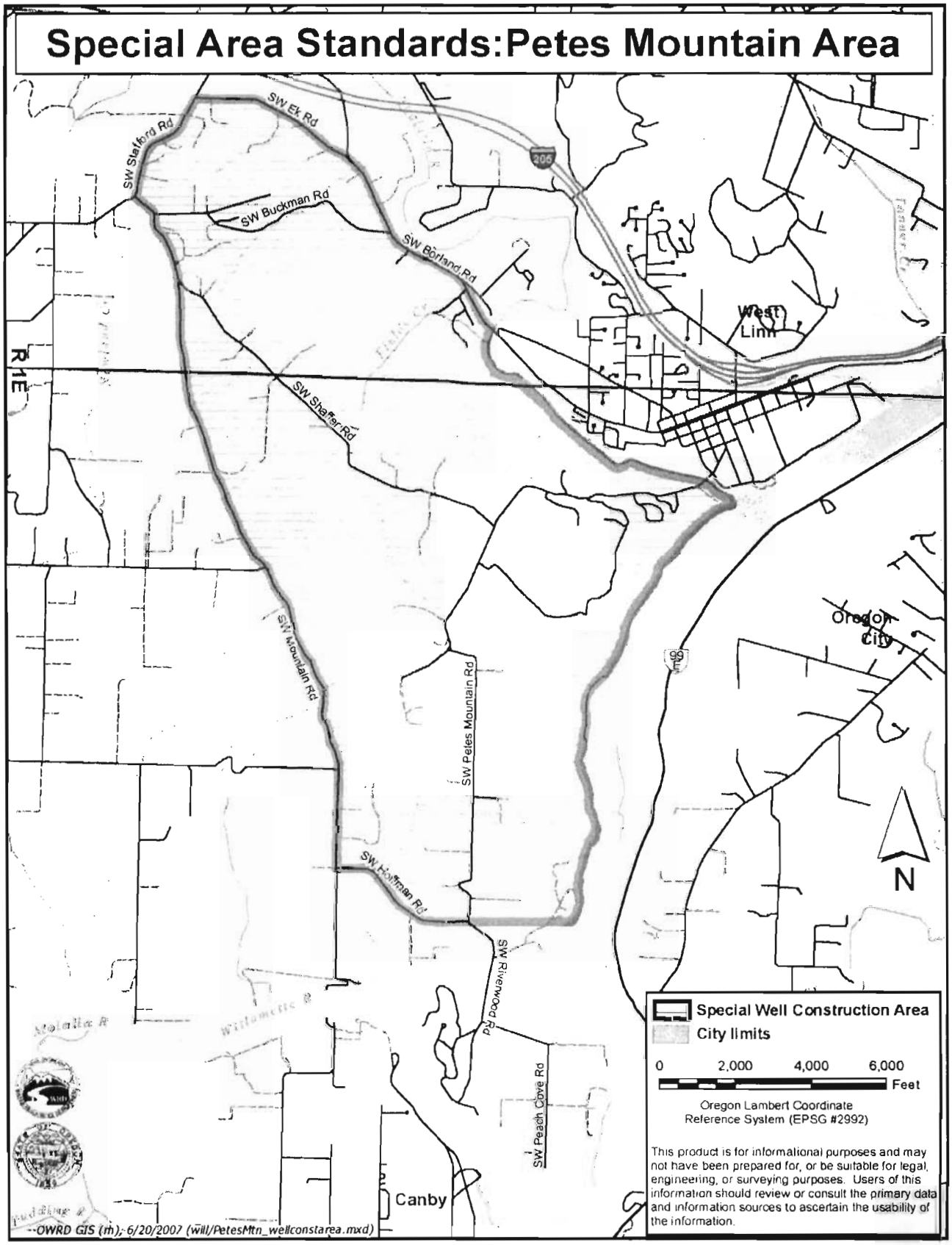
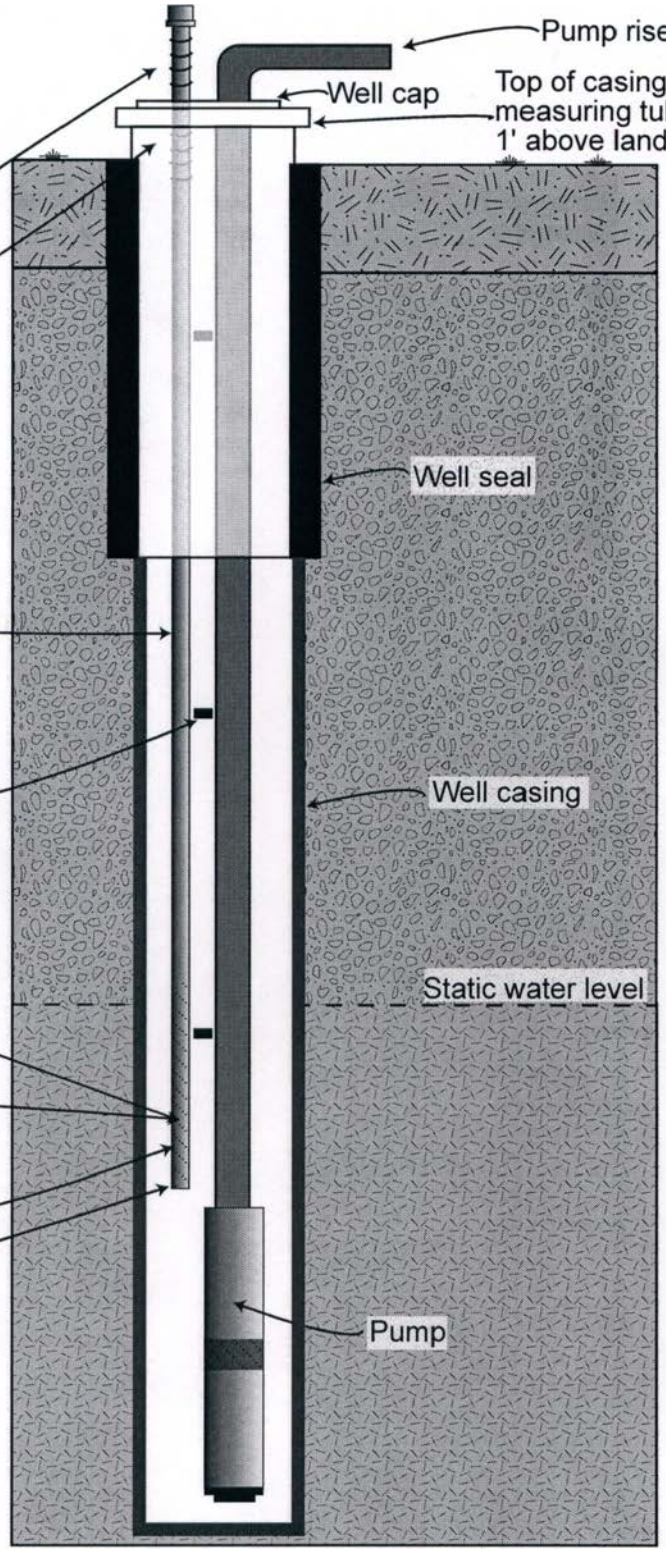

Special Area Standards:Petes Mountain Area
SW Ek Rd
SW Stafford Rd
SW Buckman Rd
SW Borland Rd
205
West Linn
T2S
T3S
R1E
SW Shafer Rd
SW Mountain Rd
SW Petes Mountain Rd
Oregon City
99E
SW Hoffman Rd
SW Riverwood Rd
SW Peach Cove Rd
Canby
N
Special Well Construction Area
City limits
0
2,000
4,000
6,000
Feet
Oregon Lambert Coordinate Reference System (EPSG #2992)
This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.
OWRD GIS (rh), 6/20/2007 (will/PetesMtn_wellconstarea.mxd)

Figure 200-5

Measuring Tube Diagram and Specifications

Minimum Specifications for Measuring Tube

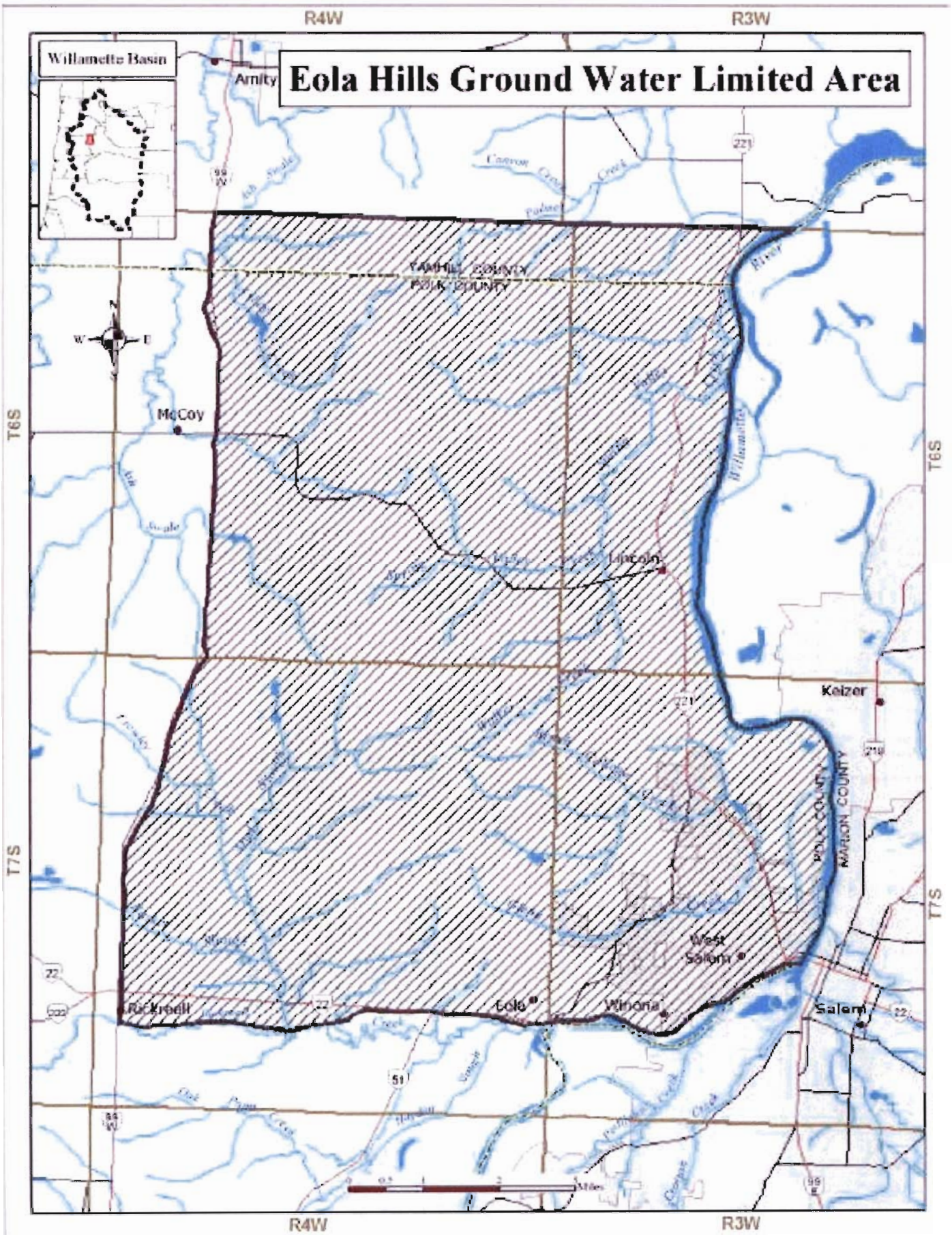
- Vented above and below well cap.
- If well has a pitless adaptor, the measuring tube terminates within 6 inches of the top of well casing.
- Measuring tube nominal 3/4 inch diameter schedule 40 PVC.
- Attached to pump column at 10 foot intervals with 10 mil plastic tape.
- Perforation / Screen
  - Lower 5 feet 0.020 inch machine-slotted well screen or
  - Lower 20 feet extensively perforated with 1/8 inch holes.
- Extends to top of pump.
- Plug or cap.



This diagram details the minimum standards for a dedicated measuring tube. A measuring tube may be constructed in a manner that exceeds these standards without prior Department approval. The dedicated measuring tube shall not be reduced in size over the length of the pipe and shall remain free from wires or any other obstruction.

FIGURE 200-7

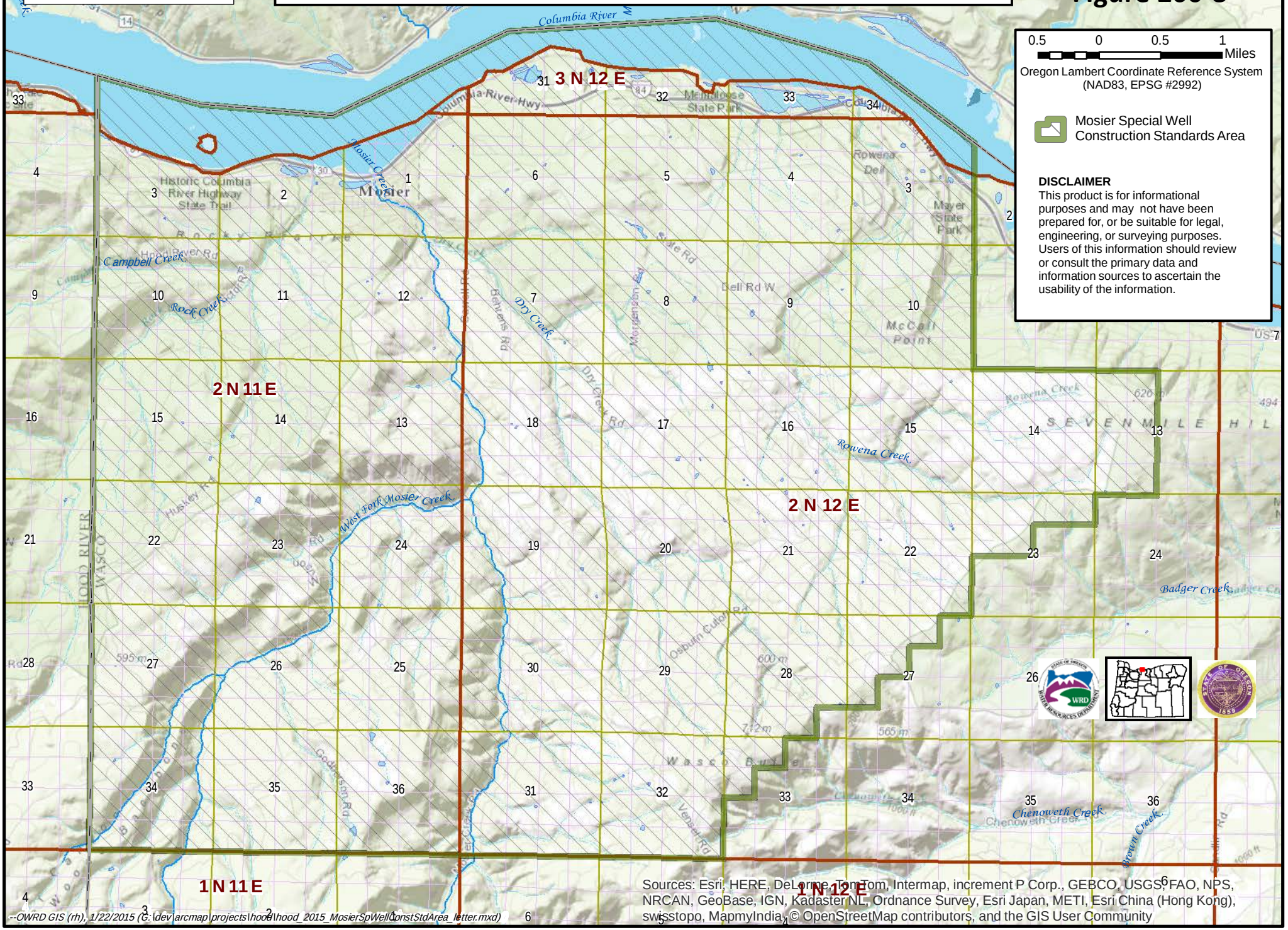
Special Area Standards
OAR 690-200-0028



OAR 690-200-0028

SPECIAL AREA STANDARDS: MOSIER AREA

Figure 200-8



WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 200-0005
WATER SUPPLY WELL CONSTRUCTION STANDARDS

TABLE 200-1

WHICH STANDARDS APPLY?

The Department regulates the construction of borings through which groundwater may become contaminated. The type of boring (and its purpose) will determine which set of regulations apply. Questions often arise as to how a certain boring is to be regulated. In general, if the purpose of a boring is to seek water then it is considered a well. The table below lists common types of holes and the standards that apply. This is not a complete list of borings and there are other types of borings regulated by other agencies. Contact the Water Resources Department if you have any questions.

The general standards and their Oregon Administrative Rule reference are:

Water Supply Wells	OAR 690-200 through 690-235
Monitoring Wells	OAR 690-240
Other Holes	OAR 690-240-0030
Geotechnical Holes	OAR 690-240-0035 through 690-240-0049

Description of Boring:	Standards that Apply
Air Sparging Well	Monitoring Well
Aquifer Storage and Recovery Well	Water Supply Well
Cathodic Protection Hole	Geotechnical Hole
Community Well	Water Supply Well
Construction Hole	Other Hole
Dewatering Well	Water Supply Well
Domestic Well	Water Supply Well
Drive Point (Core holes)	Geotechnical Hole
Drive Point Well (Dewatering)	Water Supply Well
Drive Point Well (Water Sampling)	Monitoring Well
Drive Point Well (Water Supply)	Water Supply Well
Dry (Disposal) Well	Other Hole
Elevator Shaft	Other Hole
Extraction Well	Monitoring Well
Gas Migration Hole	Geotechnical Hole
Geothermal Well	Water Supply Well
Gravel Pit	Other Hole
Heat Exchange Hole (Closed Loop)	Geotechnical Hole
Heat Exchange Hole (Open Loop)	Water Supply Well
Horizontal Drain (Slope Stability)	Geotechnical Hole
Horizontal Well (Monitoring)	Monitoring Well
Horizontal Well (Water Supply)	Water Supply Well
Inclinometer	Geotechnical Hole
Industrial Well	Water Supply Well

Injection Well (Water)	Water Supply Well
Injection Well (Remediation) (>72 Hours)	Monitoring Well
Injection Well (Remediation) (<72 Hours)	Geotechnical Hole
Irrigation Well	Water Supply Well
Monitoring Well	Monitoring Well
Municipal Well	Water Supply Well
Observation Hole	Monitoring Well
Permeability Test Hole	Geotechnical Hole
Piezometer (Electric)	Geotechnical Hole
Piezometer (Pneumatic)	Geotechnical Hole
Piezometer Well	Monitoring Well
Piling Hole	Other Hole
Post Hole	Other Hole
Power Pole Hole	Other Hole
Public Supply Well	Water Supply Well
Remediation Or Recovery Well	Monitoring Well/Water Supply Well
Rock Boring (< 10 Feet)	Other Hole
Rock Boring (> 10 Feet)	Geotechnical Hole
Seismic Shot Hole	Geotechnical Hole
Slope Stability Hole	Geotechnical Hole
Soil Boring (< 10 Feet) (geophysical borings)	Other Hole
Soil Boring (>10 Feet) (geophysical borings)	Geotechnical Hole
Soil Vapor Hole	Geotechnical Hole
Sparging Well	Monitoring Well
Storm Water Disposal	Other Hole
Sump	Other Hole (if < 10 ft. deep and > 10 ft. dia.)
Temporary Monitoring Well (<72 Hours)	Geotechnical Hole
Temporary Monitoring Well (>72 Hours)	Monitoring Well
Trench	Other Hole
Underground Storage Tank (UST) Pit	Other Hole
Vapor Extraction Hole	Geotechnical Hole
Wetland Delineation Hole	Other Hole
Wet Soil Monitoring Hole	Geotechnical Hole

WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 200
WATER SUPPLY WELL CONSTRUCTION STANDARDS

Table 200-2
(OAR 690-200)

Watermaster Office Phone Numbers

District	Watermaster Office	Phone Number
1	Tillamook	503-815-1967
2	Eugene	541-682-3620
3	The Dalles	541-506-2653
4	Canyon City	541-575-4040
5	Pendleton	541-278-5456
6	La Grande	541-963-1031
7	Enterprise	541-426-4464
8	Baker City	541-523-8224
9	Vale	541-473-5130
10	Burns	541-573-2764
11	Bend	541-306-4808
12	Lakeview	541-947-6038
13	Medford	541-774-6882
14	Grants Pass	541-479-2401
15	Roseburg	541-440-4255
16	Salem	503-986-0889
17	Klamath Falls	541-883-4182
18	Hillsboro	503-846-7780
19	Coquille	541-297-6157
20	Clackamas	503-722-1410
21	Condon	541-384-4207

Notes:

1. Watermaster phone numbers are subject to change.
2. A current version of this table is available from the Water Resources Department's Salem office.

WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 205
WATER SUPPLY WELL CONSTRUCTION STANDARDS; LICENSING

690-205-0005
License or Permit Required to Construct Water Supply Wells

(1) Unless otherwise provided in these rules, any person who constructs, alters or abandons water supply wells for another person shall have a Water Supply Well Constructor's license or work under the supervision of a licensed Water Supply Well Constructor.

(2) If a person advertises services and/or enters into contracts for the construction, alteration or abandonment of water supply wells for another person, that person shall furnish a $10,000 Water Well Constructor's Bond or Irrevocable Letter of Credit to the Water Resources Commission and must be a licensed Water Supply Well Constructor.

(3) A property owner who constructs, alters, or abandons a water supply well on their own property shall have a Landowner Well Permit as described in OAR 690-205-0175 for each water supply well on which work is done.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 1-2003, f. & cert. ef. 3-14-03; WRD 4-2004, f. & cert. ef. 6-15-04; WRD 2-2006, f. & cert. ef. 6-20-06

690-205-0010
Water Supply Well Constructor License Examination

(1) The Water Resources Department administers the written examination required under ORS 537.747. Separate examinations are administered for each license endorsement. The Department schedules the examination on the second Monday during the months of January, April, July and October. Examinees must pay a $20.00 exam fee. Special accommodations may be given to those individuals who cannot attend the regularly scheduled examination dates. Requests shall be considered on a case-by-case basis. The examination tests the applicant's knowledge of:

(a) Oregon laws and administrative rules on the use of ground water, water supply well constructor licensing requirements, the construction of water supply wells, and the preparing and filing of Start Cards and Water Supply Well Reports;
(b) Hydrogeology, the occurrence and movement of ground water, and the design, construction and development of water supply wells; and
(c) Types, uses, and maintenance of drilling tools and equipment, drilling problems and corrective procedures, repair of faulty water supply wells, sealing of water supply wells, and safety rules and practices.

(2) An applicant who fails to pass an endorsement examination may retake an examination for the same endorsement after three months and the payment of another examination fee.

(3) Passing examination scores are valid for three years from the date of the examination.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 7-1988, f. & cert. ef. 6-29-88; 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

690-205-0020
Water Supply Well Constructor's License, Experience Requirements and Trainee Card

(1) License. To qualify for a Water Supply Well Constructor's License, a person shall:
- (a) Be at least 18 years old;
- (b) Pass a written examination;
- (c) Have a minimum of one year experience, during the previous 36 month period, in water supply well construction, conversion, alteration, or abandonment. This experience shall include the operation of well drilling machinery for water supply well construction, alteration, conversion, or abandonment on a minimum of fifteen water supply wells or a demonstration of equivalent experience in the operation of well drilling machinery. The following are acceptable as evidence of experience:
  - (A) Water supply well reports, or rough well logs with applicants' name entered, for each of the 15 wells. The name, address, and telephone number of the person responsible for the construction of each well shall be included on each report or log.
  - (B) Income tax returns showing source of drilling income for a period of time, or worker's compensation account information or the equivalent may be established to satisfy the one year of active construction requirement.
  - (C) Any other evidence the Director may deem suitable.
  - (D) A license held in another state shall not substitute for required evidence of experience.
- (d) Pay a license fee.

(2) Trainee. If an applicant passes the written Water Supply Well Constructor's License examination, but cannot meet the experience requirement, the Commission may issue a trainee card. To qualify for a Water Supply Well Constructor Trainee Card, a person must:
- (a) Be at least 18 years old;
- (b) Pass a written examination; and
- (c) Be supervised by a person who holds a valid Water Supply Well Constructor's License.

(3) Trainee card. A trainee card is valid for three (3) years from the date the examination was passed.

(4) Supervision. Supervision as it relates to any person who holds a Water Supply Well Constructor Trainee Card:

(a) A trainee may operate a cable tool drilling machine without a licensed Water Supply Well Constructor physically present at the well site only if:

(A) The licensed constructor can reach the well site within two hours if so requested by an authorized representative of the Department; and

(B) The licensed constructor has signed the rough drilling log within eight working hours prior to the representative's visit.

(b) A licensed Water Supply Well Constructor must physically be on the site at all times when a cable tool drilling machine is:

(A) Drilling within a flowing artesian well;

(B) Setting or advancing casing;

(C) Setting liner;

(D) Perforating casing;

(E) Setting well screens;

(F) Placing packers;

(G) Placing casing seals;

(c) A Water Supply Well Constructor trainee may operate a non-cable tool water supply well drilling machine without a licensed Water Supply Well Constructor physically present at the well site only during the following events:

(A) Air test or pump test of the well;

(B) Gravel packing operations;

(C) Developing a completed well;

(D) Removal of the drill stem from the well.

(d) Activities under subsection (4)(c)(A)-(D) of this rule shall proceed only if:

(A) The licensed Water Supply Well Constructor can reach the site within one hour if so requested by an authorized representative of the Department; and

(B) The licensed Water Supply Well Constructor has signed the rough drilling log within eight working hours prior to the representative's visit.

(e) An authorized representative of the Department in whose jurisdiction the water supply well is being constructed has the authority to:

(A) Grant an extension to the time limits stated above when a request, showing good cause, is received from the bonded constructor in advance for each particular well; and

(B) Place additional restrictions on the trainee, including requiring the constructor to be on the site at all times while the drilling machine is operating, when the authorized Department representative determines that either the drilling environment or the knowledge and/or experience of the trainee warrant closer supervision.

(f) For a Water Supply Well Constructor Trainee to operate a water supply well drilling machine without a licensed Water Supply Well Constructor present, the trainee's card must be endorsed with the name of the bonded Water Supply Well Constructor responsible for the construction of the water supply well.

(5) Other supervision requirements for persons not licensed or permitted to construct water supply wells, or who do not hold a Water Supply Well Constructor Trainee Card:

(a) Persons who are in the act of constructing, altering, converting or abandoning water supply wells must be supervised by a licensed Water Supply Well Constructor who is physically present at the well site at all times during construction, alteration, conversion, or abandonment activity.

(b) The supervising Water Supply Well Constructor is responsible for all applicable statutes and rules in construction, alteration, conversion, or abandonment of the water supply well.

(6) Persons who satisfy all requirements of ORS 537.747(3) shall be issued a Water Supply Well Constructor's License. The responsibilities for issuing and securing a Water Supply Well Constructor's License or trainee card are listed in subsections (a) and (b) of this section.

(a) The Water Supply Well Constructor's License applicant is responsible for:

(A) Completing an application or renewal form for a new or renewed license or trainee card;

(B) Submitting the application or renewal form to the Water Resources Department along with the required fees;

(C) Carrying the license or trainee card whenever constructing, altering, converting, or abandoning any water supply well; and

(D) Providing the Water Resources Department, within 30 days, notification of any change of mailing address.

(E) Providing the Water Resources Department documentation satisfying the continuing education requirements set forth in OAR 690-205-0035 through 690-205-0120.

(b) The Water Resources Department is responsible for:

(A) Designing and providing Water Supply Well Constructor license(s) and trainee cards;

(B) Designing and providing application forms and renewal forms for licenses and application forms for trainee cards;

(C) Processing applications and renewals for licenses and applications for trainee cards;

(D) Returning incomplete application and renewal forms to applicants for completion; and

(E) Sending new and renewed licenses to applicants who have completed the application or renewal form and submitted the required fee. This does not preclude refusal to renew as outlined in OAR 690-205-0025(4).

(7) Bonded Water Supply Well Constructor. For a person to possess a bonded Water Supply Well Constructor's License, the person must provide to the Department a properly executed Water Well Constructor's Bond or Irrevocable Letter of Credit. The Water Resources Department shall indicate on the constructor's license a bonded classification.

(8) Representatives of the Water Resources Department may ask anyone constructing, altering, or abandoning a water supply well to present their license or trainee card as proof of eligibility to construct, alter, convert, or abandon water supply wells in the State of Oregon. Licensed individuals shall display their license or trainee card and photo identification when they are requested to do so by Water Resources Department personnel.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 1-2003, f. & cert. ef. 3-14-03; WRD 2-2006, f. & cert. ef. 6-20-06

690-205-0025
Term of Water Well Constructor License and License Fees

(1) The Department issues all Water Supply Well Constructor licenses. License fees are established by ORS 537.747. A penalty applies to late renewals.

(2) Fees for new licenses and renewal licenses are the same. The fee for a two year license is $150. All licenses expire on June 30 of the second year.

(3) A $100 penalty applies when a licensee renews a license within 12 months of the expiration date. There is no charge for a Trainee Card.

(4) Water Supply Well Constructors who have not made arrangements with the Water Resources Department to pay civil penalties which are assessed against them shall not be issued a license renewal or a new license until after arrangements for payment have been agreed to by the Department. Water Supply Well Constructors who have made arrangements for payment of civil penalties and have failed to meet the terms of the agreement, except in certain cases of bankruptcy, may not have their license renewed or a new license issued until all outstanding civil penalties owed to the Department have been paid.

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 3-1983, f. & ef. 4-28-83; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-010-0020; WRD 7-1988, f. & cert. ef. 6-29-88; 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

690-205-0035
Continuing Education Committee

A Continuing Education Program and Continuing Education Committee are established under chapter 496, Oregon Laws 2001 (ORS 537.765). The duties of the Well Constructors Continuing Education Committee are to review and approve continuing education courses and assign continuing education credits.

Note: These rules were filed with the Office of the Secretary of State and took effect on 9/6/2016. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2)(a) when published by the Secretary of State.

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795
Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795
Hist.: WRD 1-2003, f. & cert. ef. 3-14-03

690-205-0045
Continuing Education Requirement

(1) As of June 30, 2005, each individual licensed under ORS 537.747 is required to obtain a minimum of 14 continuing education credits (CECs) during each licensing period regardless of the number of licenses or endorsements held. Continuing education credits may be obtained through clinics, schools, professional organizations, seminars, lectures or other continuing education courses that relate to the practice of well construction and are approved by the Continuing Education Committee.

(2) A minimum of two (2) CECs shall pertain to ground water and well construction statutes under ORS 537.505 to 537.795 and 537.992, and administrative rules under OAR 690-200 through 690-240 during each licensing period.

(3) A maximum of eight (8) CECs may be obtained through approved safety/first aid/CPR/Hazardous Materials courses during each licensing period. Of the eight (8) CECs, a maximum of four (4) CECs may be obtained through Hazardous Materials training courses and a maximum of four (4) CECs may be obtained through safety/first aid/CPR courses.

(4) Exhibitions shall count as one (1) CEC per approved exhibition attended and shall not exceed two (2) CECs per licensing period.

(5) Licensees may count approved CECs accumulated after January 1, 2002, for their first license renewal that requires CECs.

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795
Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795
Hist.: WRD 1-2003, f. & cert. ef. 3-14-03

690-205-0055
Documentation

(1) Each licensee is responsible for maintaining their own continuing education records. Except as provided in OAR 690-205-0110(2), each licensee shall provide the Department with evidence of compliance with the continuing education requirement on a form approved by the Continuing Education Committee prior to or at the time of license renewal.

(2) Licensees who do not provide documentation of completion of the continuing education requirement or receive a waiver shall not have their license(s), or appropriate endorsement(s), renewed until this requirement is satisfied.

(3) Licensees who provide documentation of completion of the continuing education requirement within the 12 months after their license expires may either pay the $100 late penalty fee or requalify for a new Water Supply Well Constructor's License or endorsement in accordance with ORS 537.747(3). If a licensee fails to provide documentation of completion of the continuing education requirement within 12 months after expiration of their license or endorsement the person must comply with the requirements of ORS 537.747(3) for a new Water Supply Well Constructor's License or endorsement.

(4) CECs acquired during a renewal period in excess of the minimum CECs required may not be applied to future licensing periods.

(5) When an individual obtains a new Water Supply Well Constructor's License that expires within 14 months or less, the continuing education requirement shall be prorated such that only seven (7) CECs are required at the first renewal. Of the seven (7) required CECs:

(a) A maximum of two (2) CECs may be in Hazardous Materials training;
(b) A maximum of two (2) CECs may be in safety/first aid/CPR; and
(c) A minimum of one (1) CEC shall pertain to ground water and well construction statutes under ORS 537.505 to 537.795 and 537.992, and administrative rules under OAR 690-200 through 690-240.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 1-2003, f. & cert. ef. 3-14-03; WRD 2-2006, f. & cert. ef. 6-20-06

690-205-0070 [Renumbered to 690-205-0200]

690-205-0075
Approved Course List/Course Approval and Assignment of CECs

(1) The Department shall maintain a Continuing Education Committee-approved list of courses. The list shall include, but not be limited to, the course title, class location and date, cost, (if applicable), and CECs assigned.

(2) The Continuing Education Committee shall evaluate all courses related to continuing education for well constructors and may assign CECs. The Continuing Education Committee shall notify the course sponsor in writing of the results of their evaluation of the course material. The following criteria may be utilized to evaluate and assign CECs:

(a) Course agenda and how well the subject relates to water well construction and other borings regulated by the Department;
(b) Instructor qualifications;
(c) Subject difficulty;
(d) Student course evaluations, if applicable; and
(e) Other information as appropriate.

(3) A licensee who is also the instructor of an approved continuing education course shall be entitled to double CECs for that course. A licensee who is also the instructor of an approved

course, shall receive CECs for the course once during a single renewal period, regardless of the number of times a course is presented.

(4) The following courses do not require pre-approval by the Continuing Education Committee:
(a) First Aid and CPR, provided the instructor is certified by the American Red Cross, or has certification accepted by the American Red Cross;
(b) Occupational Safety and Health Administration (OSHA) approved Hazardous Materials Training; and
(c) OSHA approved courses pertaining to the well construction industry.

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795
Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795
Hist.: WRD 1-2003, f. & cert. ef. 3-14-03

690-205-0085
Course Sponsor Requirements

(1) Course sponsors shall submit a completed application for approval to the Continuing Education Committee on a form(s) provided by the Department at least 45 days prior to the date the course is to be presented. Approved sponsors shall:
(a) Advertise the course to the satisfaction of the Continuing Education Committee;
(b) Provide the Department with a certified class roster within 30 days after completion of the course;
(c) Provide documentation of completion to each qualifying attendee that shall include at a minimum: course title, course date(s), number of approved credits, and instructor and/or sponsor signature; and
(d) Maintain the certified class roster for two years.

(2) All clinics, courses, classes, workshops, and seminars shall be open to anyone who wants to attend. This does not preclude a sponsor from imposing reasonable requirements for attendance such as fees, maximum occupancy limits, and requiring attendees to provide their own safety equipment.

(3) Course approval and assigned CECs shall be effective for two years as long as the course remains the same. The Continuing Education Committee shall be notified in writing by the course sponsor, 45 days in advance of each time an approved continuing education course is presented. Such notification shall include the course title, date, class location, cost (if applicable), number of credits assigned, and a statement that the program has not changed from the course previously approved by the Continuing Education Committee.

[ED. NOTE: Forms referenced 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 1-2003, f. & cert. ef. 3-14-03

690-205-0095
Loss of Approval

The Continuing Education Committee may withdraw or suspend approval of a course if it is determined that any of the following has occurred:
(1) The course content has changed without notice to the Continuing Education Committee;

(2) The course was not advertised to the satisfaction of the Continuing Education Committee;

(3) Documentation of completion has been issued to an individual who did not attend or complete the course in accordance with the provisions under which the course was approved;

(4) Documentation of completion was not given to all individuals who satisfactorily completed the course in accordance with the provisions under which the course was approved;

(5) A certified class roster was not maintained by the sponsor for two years;

(6) Fraud or misrepresentation has occurred with the application for course approval, maintenance of records, teaching method, course content, or issuance of certificates for a course; or

(7) Any other factor the Continuing Education Committee deems appropriate.

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795
Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795
Hist.: WRD 1-2003, f. & cert. ef. 3-14-03

690-205-0110
Courses Taken Without Prior Approval

(1) Except as provided in OAR 690-240-0210(5), a licensee may request that the Continuing Education Committee assign CECs for courses taken without prior approval within the current licensing period.

(2) The licensee shall supply verification of attendance, a course outline, and a written explanation as to why prior approval was not obtained. This information must be received in the Salem office of the Department no later than May 15 of the year that their license or appropriate endorsement expires.

(3) Courses taken without prior approval shall be evaluated by the Continuing Education Committee on a case-by-case basis using the criteria outlined in OAR 690-205-0075(2). This shall not apply to courses that do not require pre-approval under 690-205-0075(4).

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

Note: These rules were filed with the Office of the Secretary of State and took effect on 9/6/2016. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2)(a) when published by the Secretary of State.

Hist.: WRD 1-2003, f. & cert. ef. 3-14-03

690-205-0120
Waivers

(1) The Director may waive the continuing education requirements for a licensed Water Supply Well Constructor upon written request demonstrating inability to attend continuing education courses because of health, military duty or other circumstances beyond the control of the constructor.

(2) Licensees who are denied a waiver may appeal to the Commission by filing a written exception with the Department within 60 days of service of the Director's order.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 1-2003, f. & cert. ef. 3-14-03; WRD 2-2006, f. & cert. ef. 6-20-06

690-205-0145
Contracting for Services

Only Oregon licensed and bonded Water Supply Well Constructors may advertise services or enter into a contract, either written or oral, to construct, alter, convert, or abandon a water supply well. Any written bid for a project which includes the construction, alteration, conversion, or abandonment of a water supply well must provide:

(1) A bid or estimate for the work associated with water supply well construction signed by a Water Supply Well Constructor, who is licensed and bonded in the State of Oregon; and

(2) A statement by the licensed and bonded Water Supply Well Constructor that the work will be completed in accordance with Oregon Ground Water Law (ORS Chapter 537) and the Rules and Regulations for the Construction, Maintenance, and Abandonment of Water Supply Wells in Oregon (OAR chapter 690, divisions 200-230).

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 1-2003, f. & cert. ef. 3-14-03, Renumbered from 690-205-0030; WRD 2-2006, f. & cert. ef. 6-20-06

690-205-0155
Water Supply Well Constructor and Landowner Well Bonds or Letters of Credit

(1) The Water Resources Commission shall only accept bonds from corporations licensed by the Oregon Department of Insurance and Finance to issue fidelity and surety insurance. The Water Resources Department shall only accept irrevocable letters of credit from a bank as described in

ORS 706.008.

(2) If the issuing corporation cancels a bond, the corporation shall provide notice of cancellation to the Water Resources Department by registered or certified mail. If the issuing bank cancels a letter of credit, the bank shall provide notice of cancellation to the Water Resources Department by registered or certified mail. The cancellation shall not take effect earlier than the 30th day after the date of mailing in accordance with ORS 742.366(2).

(3) When issuing a final enforcement order that may place a bond or irrevocable letter of credit in jeopardy, the Director may mail a copy of the order to the address of record of the surety company issuing the bond, or the bank issuing the irrevocable letter of credit.

(4) All wells shall be constructed under a bond or irrevocable letter of credit. The bond or letter of credit shall cover construction, alteration, conversion, or abandonment for each well under that bond or letter of credit for a period of three years after the date the well report is filed with the commission, whether or not the bond or letter of credit has been subsequently canceled.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 3-1983, f. & ef. 4-28-83; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-010-0024; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 1-2003, f. & cert. ef. 3-14-03, Renumbered from 690-205-0040; WRD 2-2006, f. & cert. ef. 6-20-06

690-205-0175
Landowner Well Construction Permit, Fee and Bond

(1) The Water Resources Commission requires a permit, permit fee, and bond or irrevocable letter of credit, for each water supply well constructed, altered, converted, or abandoned by a landowner, unless the landowner is a licensed and bonded Water Supply Well Constructor. The landowner permit and bond shall be obtained prior to beginning work on a well.

(2) To receive a Landowner Well permit, a person must submit the following to the Director:
- (a) A completed application form provided by the Commission, containing:
  - (A) The property owner's name, address and telephone number;
  - (B) The surety company's name, address and telephone number;
  - (C) The proposed location of the well by township, range, section, tax-lot number if assigned, and street address;
  - (D) The proposed use of the water supply well; and
  - (E) The type of proposed work; and
  - (F) Well design plan on form approved by the Department.
- (b) A properly executed Landowner's Water Well Bond or Irrevocable Letter of Credit for $5,000 to the State of Oregon; and
- (c) A $25 permit fee.

(3) Only the owner of record, a member of the immediate family of the owner of record, or a full time employee of the owner of record, (whose main duties are other than the construction of wells), may operate a well drilling machine under a landowner's permit.

(4) A landowner permit issued pursuant to these rules shall expire six months from the date of issuance.

(a) A water well report shall be submitted within 30 days of expiration of the landowner permit, or within 30 days of completion of the well, whichever occurs first.

(5) If the landowner permit expires, a landowner may reapply for a new landowner permit by complying with the requirements described in sections (1), (2) and (3) of this rule.

(6) The Department may deny a landowner permit if it is determined that the construction, alteration, abandonment, or conversion of the proposed well is a health threat, a health hazard, a source of contamination, or a source of waste of the ground water resource.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 3-1983, f. & ef. 4-28-83; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-010-0026; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 7-2001, f. & cert. ef. 11-15-01: WRD 1-2003, f. & cert. ef. 3-14-03, Renumbered from 690-205-0050; WRD 4-2004, f. & cert. ef. 6-15-04; WRD 2-2006, f. & cert. ef. 6-20-06

690-205-0185
Water Supply Well Drilling Machines

(1) All water supply well drilling machines being operated, other than under a landowner's permit, shall be plainly marked either with the bonded Water Supply Well Constructor's license number, the name of the bonded Water Supply Well Constructor, or the name of the well drilling business. The markings shall be permanently affixed on each side of the machine. Good quality paint or commercial decal numbers shall be used in placing the identification information on the drilling machine. In no case shall the constructor's license number, name, or business name, be inscribed with crayon, chalk, marking keel, pencil, or other temporary markings.

(2) In all cases, the license number, name, or business name, of the bonded Water Supply Well Constructor shall be removed from the drilling machine immediately upon change of ownership or change of control of the drilling machine.

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 3-1983, f. & ef. 4-28-83; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-010-0030 & 690-060-0035; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 1-2003, f. & cert. ef. 3-14-03, Renumbered from 690-205-0060; WRD 2-2006, f. & cert. ef. 6-20-06; WRD 5-2015, f. & cert. ef. 7-1-15

690-205-0200
Water Supply Well Construction Notice Required (Start Card)

(1) Each bonded Water Supply Well Constructor licensed to operate in the State of Oregon and each landowner holding a landowner's permit shall provide notice as required in ORS 537.762 before commencing the construction, alteration, or abandonment of any water supply well or conversion of any monitoring well, geotechnical hole, or other hole to a water supply well. The start card shall contain the following information:

(a) Name and mailing address of the landowner;
(b) Street address of the well;
(c) The approximate location of the water supply well; and
(d) The proposed depth, diameter, and purpose or use if the well is new, altered, or converted.

(2) In addition to the information required pursuant to OAR 690-205-0200(1)(a)-(d), a start card may also contain information regarding the type of proposed alteration.

(3) Forms for making these reports and submitting fees shall be furnished by the Department.

(4) Landowners who construct, alter, convert, or abandon a water supply well shall also comply with OAR 690-205-0175.

[ED. NOTE: Tables and Figures referenced are available from the agency.]

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 3-1983, f. & ef. 4-28-83; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-010-0035; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 7-1989(Temp), f. & cert. ef. 9-29-89; WRD 10-1989, f. & cert. ef. 11-20-89; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 2-2002, f. & cert. ef. 9-6-02; WRD 1-2003, f. & cert. ef. 3-14-03, Renumbered from 690-205-0070; WRD 4-2004, f. & cert. ef. 6-15-04; WRD 2-2006, f. & cert. ef. 6-20-06; WRD 3-2008, f. 12-22-08, cert. ef. 1-2-09

690-205-0205
Start Card Reporting Requirements

(1) The start card notification required in ORS 537.762 shall be submitted to the Department's region office within which the water supply well is being constructed, altered converted or abandoned using one of the following methods:

(a) Start cards submitted electronically shall be transmitted by a Department-approved method and shall be submitted before beginning construction, alteration, conversion or abandonment work on any water supply well.
(b) By regular mail no later than three (3) calendar days (72 hours) prior to commencement of work; or
(c) By hand delivery, during regular office hours, before beginning the construction, alteration, conversion or abandonment work on any water supply well or

(d) By facsimile transmission (FAX) before beginning the construction, alteration, conversion or abandonment work on any water supply well. If this method is used, a legible copy of the start card shall also be mailed, or delivered to the appropriate OWRD region office no later than the day work begins.

(2) The fee required under ORS 537.762(5) for the construction of a new well, deepening of an existing well, conversion of a monitoring well, geotechnical hole, or other hole shall be submitted to the Department's Salem office with a duplicate copy of the start card. A duplicate start card is not required if the start card fee is included with a start card submitted electronically under Section (1)(a) of this rule.

(3) If a start card has been filed under section (1) and (2) of this rule and additional wells are required on the same or contiguous tax lot and for the same landowner, then start cards for the additional wells shall be filed no later than the day work begins.

(4) The Director or region office may provide an alternative means of notification. If an alternative means of notification is used, the start card shall be mailed or delivered to the region office within one week of beginning work on the water supply well. A Water Supply Well Constructor whose license has been restricted by order shall provide notice as stipulated in the order.

(5) Once received by the Department, the start card shall be confidential for a period of one year after it is received or until the water supply well report required by OAR 690-205-0210 is received, whichever is shorter.

(6) The start card may be used in an administrative enforcement action at any time, including the period of confidentiality. Once the start card is used for enforcement reasons, it is no longer confidential.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 3-2008, f. 12-22-08, cert. ef. 1-2-09

690-205-0210
Well Report Required (Water Supply Well Log)

(1) A water well report (water well log) shall be prepared for each water supply well constructed, altered, converted, or abandoned. This requirement includes unsuccessful wells and wells exempt from appropriation permit requirements under ORS 537.545. The log shall be certified as correct by signature of the Water Supply Well Constructor constructing the water supply well. The completed log shall also be certified by the bonded Water Supply Well Constructor responsible for construction of the well. A water well report must be submitted by each bonded constructor (if drilling responsibility is shifted to a different bonded constructor), showing the work performed by each bonded constructor.

(2) The log shall be prepared in triplicate on forms furnished or previously approved in writing by the Water Resources Department. The original shall be furnished to the Director, the first copy shall be retained by the Water Supply Well Constructor, and the second copy shall be given to the customer who contracted for the construction of the water supply well.

(3) The bonded Water Supply Well Constructor shall file the water well log with the Director within 30 days after the completion of the construction, alteration, conversion or abandonment of the water supply well.

(4) The trainee or Water Supply Well Constructor operating the water supply well drilling machine shall maintain a rough log of all geologic strata encountered and all materials used in the construction of the water supply well. This log shall be available for inspection by the Watermaster, or other authorized agent of the Water Resources Department at any time before the water well report is received by the Department. The rough drilling log shall be in handwritten or electronic form, or a voice recording.

(5) In the event a constructor leaves any drilling equipment or other tools in a water supply well, this fact shall be entered on the water well report.

(6) A copy of any special authorizations or special standards issued by the Director shall be attached to the water supply well report.

(7) The report of water well construction required in section (1) of this rule shall be recorded on a form provided or previously approved in writing by the Department. The form shall include, as a minimum, the following:

(a) Name and Address of Landowner;
(b) Started/Completed date;
(c) Location of the well by county, Township, Range, Section, tax lot number, if assigned, street address, or nearest address, and either the 1/4, 1/4 section or Latitude and Longitude as established by a global positioning system (GPS);
(d) Start card number;
(e) Well identification label number (well tag number);
(f) Use of well;
(g) Type of work;
(h) Temperature of water;
(i) Total dissolved solids (TDS); and
(j) Such additional information as required by the Department.

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 3-1983, f. & ef. 4-28-83; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-010-0040; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 1-2003, f. & cert. ef. 3-14-03, Renumbered from 690-205-0080; WRD 4-2004, f. & cert. ef. 6-15-04; WRD 2-2006, f. & cert. ef. 6-20-06; WRD 8-2016, f. & cert. ef. 9-6-16

Note: These rules were filed with the Office of the Secretary of State and took effect on 9/6/2016. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2)(a) when published by the Secretary of State.

WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 205
WATER SUPPLY WELL CONSTRUCTION STANDARDS; LICENSING

Table 205-1
(OAR 690-205)

Region Office Fax Numbers

Region	Office Location	Fax Number
Eastern	Baker City	866-214-3493
North Central	Pendleton	541-278-0287
Northwest	Salem	503-986-0903
South Central	Bend	541-388-5101
Southwest	Medford	503-774-6187

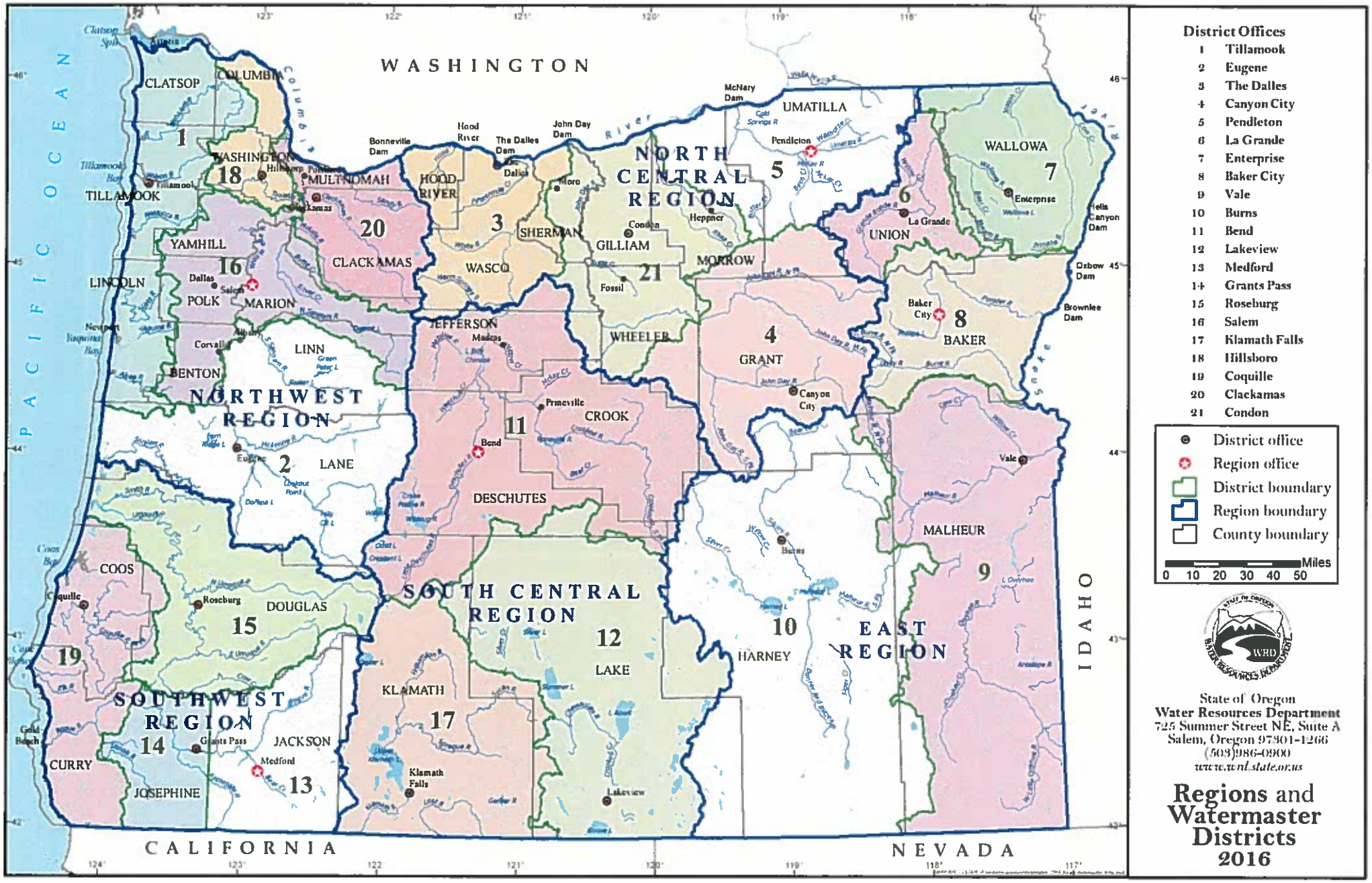
Notes:

1. Fax numbers are subject to change.

2. A current version of this table is available from the Water Resources Department's Salem office.

3. See Figure 205-1 for a map of region boundaries.

Figure 205-1


District Offices
1 Tillamook
2 Eugene
3 The Dalles
4 Canyon City
5 Pendleton
6 La Grande
7 Enterprise
8 Baker City
9 Vale
10 Burns
11 Bend
12 Lakeview
13 Medford
14 Grants Pass
15 Roseburg
16 Salem
17 Klamath Falls
18 Hillsboro
19 Coquille
20 Clackamas
21 Condon
District office
Region office
District boundary
Region boundary
County boundary
Miles
0 10 20 30 40 50
State of Oregon
Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503)986-0900
www.wrd.state.or.us
Regions and Watermaster Districts 2016
WASHINGTON
CALIFORNIA
NEVADA
IDAHO
PACIFIC OCEAN
NORTHWEST REGION
NORTH CENTRAL REGION
SOUTH CENTRAL REGION
SOUTHWEST REGION
EAST REGION
CLATSOP
COLUMBIA
TILLAMOOK
WASHINGTON
MULTNOMAH
HOOD RIVER
YAMHILL
CLACKAMAS
LINCOLN
POLK
MARION
WASCO
SHERMAN
GILLIAM
MORROW
UMATILLA
WALLOWA
UNION
BENTON
LINN
JEFFERSON
WHEELER
GRANT
BAKER
LANE
CROOK
DESCHUTES
COOS
DOUGLAS
LAKE
HARNEY
MALHEUR
CURRY
JOSEPHINE
JACKSON
KLAMATH
Tillamook
Hillsboro
Portland
Salem
Dallas
Corvallis
Albany
Eugene
Madras
Prineville
Bend
Condon
Fossil
Moro
Dalles
Hepner
Pendleton
Enterprise
La Grande
Baker City
Canyon City
Vale
Burns
Coquille
Roseburg
Grants Pass
Medford
Klamath Falls
Lakeview
McNary Dam
John Day Dam
The Dalles Dam
Hood River
Bonneville Dam
Hells Canyon Dam
Oxbow Dam
Brownlee Dam

WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 210
WELL CONSTRUCTION STANDARDS

690-210-0005
Standards Apply to all Methods of Well Construction

(1) The following well construction standards apply to all methods of water supply well construction. The methods include, but are not limited to, drilling, driving, jetting, boring, and digging.

(2) Horizontal and Remediation wells shall be constructed under special standard approval only as described in OAR 690-200-0021.

(3) Additional standards will apply to some methods as specified in the following regulations.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0216; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0030
Placement of Water Supply Wells

(1) No person shall construct a water supply well:

(a) Within 50 feet of any septic tank; or
(b) Within 100 feet of a septic drainline or sewage disposal structure or facility; or
(c) Within 50 feet of a closed sewage or storm drainage system (except those in or underneath a building); or
(d) Within 50 feet of a confined animal feeding or holding area; or
(e) Within 50 feet of any animal waste holding area such as a pond or lagoon; or
(f) Within 100 feet of any sewage sludge disposal area; or
(g) Within 5 feet from a permanent structure or the roof, eaves or overhangs of a permanent structure. This includes decks or other additions to the structure that may hinder the ability of a drilling machine to get over the well. This does not include pump houses or other outbuildings that are easily moved; or
(h) Within 500 feet of a hazardous waste storage, disposal or treatment facility without written permission of the Director; or
(i) Within 25 feet of an underground or aboveground petroleum storage tank that is used for residential purposes; or

(j) Within 50 feet of an underground or aboveground petroleum storage tank that is used for commercial purposes.

(2) A new water supply well may be constructed at the site of an abandoned septic tank or drain field one year after the septic tank or drain field is taken out of use. The abandoned septic tank shall be pumped by a DEQ licensed sewage disposal business to remove all contents. Following pumping, the tank shall be filled with reject sand, bar run gravel or other material approved by the on site sub-surface sewage permitting agent. The delivery line between the building and the tank shall be permanently capped or filled with cement grout. A water supply well shall not be constructed through an abandoned septic tank or septic drain line. The new water supply well shall be located to meet other setbacks as directed in section (1) of this rule.

(3) Rain water gutter downspouts and drains are exempt from the setback requirements.

(4) The constructor should consider whether greater setback distances are required for the protection of the ground water depending on the topography and local geology.

(5) To enable drilling equipment future access to the water supply well for alteration, repair, or abandonment, the property owner should maintain a minimum twenty-foot separation distance between the well and any power pole.

(6) Additional Oregon Health Authority setback standards apply to wells used for public water systems. See OAR 333-061-0050(2) or contact the Oregon Health Authority for more information.

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 690-060-0015; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15; WRD 8-2016, f. & cert. ef. 9-6-16

690-210-0060
Explosives

(1) If explosives are used in the construction of a water supply well, their use must be reported on the well report. The type and amount of explosive(s) used shall be reported.

(2) In no case shall explosives other than commercially developed gun perforators be detonated inside the well casing or liner pipe without written permission from the Director. The request shall include the type of explosive to be used, how it will be placed, and where it is to be placed. In no case shall an explosive charge be dropped down a well or used to sever installed well casing or liner pipe.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0066; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0065
Hydrofracturing

(1) If the water supply well is hydrofractured, the constructor shall so note on the well report. Information reported shall include methods and materials used, maximum pressure exerted on the formation, location of packers, initial and final static water level figures, as well as initial and final yield figures.

(2) In no case shall hydrofracturing allow commingling of waters within the well bore.

(3) The well shall not be hydrofractured within 20 feet of the bottom of the existing well casing.

(4) Clean sand or other materials (propping agents) approved by the Department may be injected into the well to hold the fractures open when the pressure is removed.

(5) All tools and propping agents shall be disinfected prior to placement into the well.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0070
Injection Wells

No water supply well subject to these rules shall be used for the injection of surface or ground waters, or chemically or thermally altered waters, unless the injection installation, well design, and receiving formations are approved by the Water Resources Department. For additional regulations on the use of wells for injection purposes, contact the Oregon Department of Environmental Quality.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-060-0030; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0100
Mineralized or Contaminated Groundwater

All formations which yield contaminated or mineralized water shall be adequately cased and sealed off to prevent contamination of the overlying or underlying water-bearing zones.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0056; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0130
Sealing of Wells in Unconsolidated Formations Without Significant Clay Beds

Water supply wells drilled into unconsolidated water-bearing strata overlain by unconsolidated materials, such as sand, silt, or gravel, without significant clay beds, shall have a watertight, unperforated well casing extending to a minimum of eighteen feet below land surface. An upper oversize drillhole, four inches greater in diameter than the nominal diameter of the casing, shall be constructed to a minimum depth of 18 feet. To prevent caving, a temporary surface casing, at least 18 feet in length, shall be used throughout the construction of the annular seal space. The annular space between the permanent well casing and the upper, oversize drillhole shall be completely full of grout in accordance with OAR 690-210-0310 thru 690-210-0360 after the permanent well casing is set into final position. The temporary surface casing shall be removed from the well as the annular space is filled. (See Figure 210-2)

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0126; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15

690-210-0140
Sealing of Water Supply Wells in Unconsolidated Formations with Significant Clay Beds

Water supply wells drilled into water-bearing intervals overlain by unconsolidated deposits of clay, or sand and gravel in which significant interbeds of clay are present, shall have a watertight, nonperforated, permanent well casing extending at least five feet into the clay interval overlying the water-bearing zone. In all cases, an upper oversize drillhole, at least four inches greater in diameter than the nominal diameter of the permanent well casing shall be constructed to this same depth. In the event that the subsurface materials penetrated by the upper drillhole cave, or tend to cave, an outer, temporary surface casing shall be used to case out caving materials throughout the construction of the oversize drillhole. If the clay interval is 13 feet or less below land surface, the watertight, nonperforated well casing and the upper, oversize drillhole shall extend to a minimum depth of 18 feet below land surface. If necessary to complete the well, the single, permanent well casing may be extended below the required sealing depth prior to sealing the well with grout. If preferred, a smaller diameter casing, liner, or well screen may be installed. The annular space between the permanent well casing and the upper, oversize drillhole shall be completely filled with grout in accordance with OAR 690-210-0310 through 690-210-0360 after the permanent well casing is set into final position. The temporary surface

casing shall be removed from the well as the annular space is filled. (See Figure 210-3).

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 183, 536, 537 & 540

Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79, Renumbered from 690-061-0131; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15; WRD 8-2016, f. & cert. ef. 9-6-16

690-210-0150
Sealing of Water Supply Wells in Consolidated Formations

(1) Water supply wells drilled into a water-bearing rock formation overlain by clay, silt, sand, gravel, cobbles, or similar materials, shall be constructed in accordance with one of the following methods:

(a) Method 1 (Continuous Seal):

(A) An upper oversize drillhole, at least four inches greater in diameter than the nominal diameter of the permanent well casing to be installed, shall extend from land surface to at least five feet into solid, unfractured, consolidated rock overlying the water-bearing rock formation below a depth of 13 feet. Unperforated permanent well casing shall extend to this same depth.

(B) The annular space between the permanent well casing and the drillhole wall within the consolidated rock formation shall be filled with grout using an approved grout placement method.

(C) The upper annular space between the permanent well casing and the drillhole wall shall be filled with grout using an approved grout placement method from land surface to at least five feet into a clay interval below a depth of 13 feet.

(D) The annular space between the upper and lower sealing intervals shall be filled with grout using an approved grout placement method.

(E) A smaller diameter liner pipe or well screen may be installed to complete the well.

(F) If cement grout is placed by a suitable method from the bottom of the permanent well casing to land surface (Methods A, B, D, Appendix 210-3), the upper drillhole shall be at least two inches larger than the nominal diameter of the permanent well casing. (See Figure 210-4);

(b) Method 2 (Step-Down Casing/Inner Casing):

(A) An upper oversize drillhole, at least four inches greater in diameter than the upper permanent well casing to be installed, shall extend from land surface to at least five feet into a clay interval below a depth of 13 feet.

(B) Unperforated, permanent well casing shall extend to, and be driven into, solid, unfractured, consolidated rock overlying the water--bearing rock formation.

(C) A lower drillhole, at least as large as the inside diameter of the upper permanent well casing, shall be constructed at least five feet into solid unfractured consolidated rock overlying the water-bearing rock formation.
(D) A smaller diameter steel well casing, at least two inches smaller in diameter than the diameter of the upper permanent well casing, shall extend at least five feet into solid unfractured consolidated rock overlying the water-bearing rock formation and at least eight feet into the upper permanent well casing.
(E) The annular space between the upper oversize drillhole and the upper permanent well casing, and the annular space between the smaller diameter lower permanent well casing and the lower drillhole, shall be completely filled with grout using an approved grout placement method after the upper permanent well casing and the lower permanent well casing are set into final position. (See Figure 210-5);

(c) Method 3 (Under-Reaming):
(A) An upper oversize drillhole, at least four inches greater in diameter than the permanent well casing to be installed, shall extend from land surface to at least five feet into a clay interval below a depth of 13 feet.
(B) A lower drillhole, at least two inches greater in diameter than the diameter of the permanent well casing to be installed, shall be constructed at least fifteen feet into solid, unfractured, consolidated rock overlying the water-bearing rock formation by under-reaming methods.
(C) Unperforated, permanent well casing shall extend to and be driven into solid, unfractured, consolidated rock overlying the water-bearing rock formation at the bottom of the under-reamed section following placement of the casing seal material.
(D) The annular space between the upper oversize drillhole and the permanent well casing shall be filled with cement grout using Method C or unhydrated bentonite. The annular space between the lower under- reamed drillhole and the permanent well casing shall be completely filled with grout applied under pressure in accordance with grout placement Method A, B, or D, in Appendix 210-3.
(E) Casing seals may not be placed in unconsolidated formation materials using the under-reaming method.

(2) In all cases, (Methods 1, 2, or 3, above), if materials penetrated by the upper oversize drillhole cave, or tend to cave, an outer temporary surface casing shall be used to case out all caving material throughout construction of the oversize drillhole. The temporary surface casing shall be withdrawn as the annular space is filled with grout.

[ED. NOTE: Figures and Appendices referenced are available from the agency.]
Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 183, 536, 537 & 540

Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered

from 690-061-0136; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15; WRD 8-2016, f. & cert. ef. 9-6-16

690-210-0155
Additional Standards for Artesian Water Supply Wells

(1) Water supply wells penetrating into an artesian aquifer shall have an upper oversize drillhole at least four inches greater in diameter than the nominal diameter of the permanent well casing to be installed. Watertight unperforated casing shall extend and be sealed at least five feet into the confining interval immediately overlying the artesian water-bearing zone. In all cases, a minimum of 18 feet of casing and casing seal will be required. If cement grout is placed by a suitable method from the bottom of the casing (Methods A, B, or D, in Appendix 210-3 and Figure 210-1), the diameter of the upper oversize drillhole shall be at least two inches larger than the nominal diameter of the permanent well casing.

(2) To complete the well, inner casing, liner, or a well screen may be installed. When artesian pressures are encountered in the absence of a confining interval, casing and casing seal requirements shall be determined by the Director upon written application. In the alternative, the person constructing the well may construct the well in conformance with the minimum standards for artesian wells with a confining interval, set forth in section (1) of this rule.

(3) If an artesian water supply well flows at land surface, the well shall be equipped with a control valve and a watertight mechanical cap, threaded or welded, so that all flow of water from the well can be completely stopped.

(4) All flowing artesian wells shall be equipped with a pressure gauge placed on a dead- end line. A petcock valve shall be placed between the gauge and well casing. (See Figure 210-7).

(5) All flowing artesian water supply wells shall be tested for artesian shut-in pressure in pounds per square inch and rate of flow in cubic feet per second, or gallons per minute, under free discharge conditions. This data shall be reported on the well report.

[ED. NOTE: Figures & Appendices referenced are available from the agency.]

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

Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0156, 690-061-0161, 690-061-0166, 690-061-0171 & 690-061-0176; Renumbered from 690-210-0120 by WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15; WRD 8-2016, f. & cert. ef. 9-6-16

690-210-0160
Additional Standards for Filter Pack Wells with Surface Casing

If a permanent surface casing is installed in the construction of a filter pack well, a watertight, welded, steel plate at least 3/16 of an inch in thickness shall be installed between the inner production casing and the outer surface casing at the well head. A watertight fill port with threaded cap may be installed for the purpose of placing additional filter pack material in the well. (See Figure 210-8.)

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

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0141; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0170
Additional Standards for Filter Pack Wells without Surface Casing

If a permanent surface casing is not installed in the construction of a filter pack well, and filler tubes are to be used, an oversize well bore having a nominal diameter of at least eight inches greater than the nominal diameter of the permanent well casing shall be constructed. If filler tubes are not to be used, an oversize well bore having a nominal diameter of at least four inches greater than the nominal diameter of the permanent well casing shall be constructed. A suitable plug shall be installed in the annular space between the filter pack material and the grout seal. A watertight fill pipe with threaded cap may be installed for the purpose of placing additional filter pack material in the well. The outside diameter of the fill pipe shall not exceed one-half the thickness of the grout seal surrounding the permanent well casing and shall be centered in the annular space. (See Figure 210-9.)

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

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0146; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0180
Additional Standards for Driven or Jetted Wells

All drive point wells or jetted wells shall have nonperforated, watertight casing meeting the minimum specifications shown in Table 210-1 and extending a minimum distance of 18 feet below land surface. Drive casing greater than 3-1/2 inches shall comply with the minimum

specifications in OAR 690-210-0190. An upper drillhole at least four inches greater in nominal diameter than the permanent casing shall extend at least 18 feet below land surface. The annular space shall be filled with grout. If temporary casing is used during construction, it must be removed during placement of the grout. (See Figure 210-10.)

[ED. NOTE: Tables and Figures referenced are available from the agency.]

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0186 & 690-061-0191; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0190
Steel Casing

(1) All steel casing installed shall be in new or like new condition, being free of pits or breaks, and shall meet or exceed the minimum American Society for Testing Materials (ASTM A-53A or B) specifications for steel pipe, for the sizes as set out in Table 210-2.

(2) All steel casing having a diameter larger than 20 inches shall have a wall thickness of at least 0.375 inch.

(3) Steel casing installed in a well greater than a nominal diameter of ten inches, having a wall thickness of 0.250 inch and meeting or exceeding ASTM A-53 A or B specifications must not exceed the following depth limitations (Diameter — Maximum Depth, respectively):

(a) 12 inches — 500 feet;
(b) 14 — 16 inches — 250 feet;
(c) 18 — 20 inches — 100 feet.

(4) Steel casings of other ASTM specifications shall not be used without written permission of the Director. A written request to use casing of other specifications shall be submitted to the Director. This request shall include a description of the casing specifications and the reason for its use.

[ED. NOTE: Tables referenced are not included in rule text. Click here for PDF copy of table(s).]

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0006; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-011; WRD 5-2015, f. & cert. ef. 7-1-15

690-210-0200
Steel Casing Joints

All steel casing joints shall be welded or thread coupled and shall be water tight. If welded casing joints are used, the weld shall be a full penetrating weld at least equal in thickness to the wall thickness of the casing. Welded casing joints shall have a tensile strength equal to or greater than that of the casing.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0016; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0210
Plastic Casing

(1) Plastic casing shall not be driven and may only be installed in an oversized drillhole.

(2) Plastic casing may only be installed after drilling has been completed. No drilling is allowed inside plastic casing.

(3) Such casing shall be of polymerized vinyl chloride (PVC), type 1120 or 1220, SDR 21 (Class 200) or SDR 26 (Class 160) or greater wall thickness, meeting the standards of the "National Sanitation Foundation" and the specifications of **ASTM F-480** or **ASTMD-2241-73** and **D-1784-69**. The well casing must be clearly marked by the manufacturer showing: nominal size, type plastic material, Standard Dimension Ratio (SDR), ASTM designation, and National Sanitation Foundation seal of certified approval. The maximum depth to which this plastic casing may safely resist collapsing forces is a function of the "Standard Dimension Ratio" (SDR), i.e., the ratio of the outside diameter to the casing wall thickness. The maximum depths have been computed for readily available SDR and are cited as:

(a) SDR = 21 — Maximum Depth = 150 feet;
(b) SDR = 26 — Maximum Depth = 100 feet.

(4) If PVC casing is to be used, it shall be protected from physical and ultraviolet light damage using one of the following methods:

(a) By use of an upper protective steel casing meeting the requirements of OAR 690-210-0190. The protective steel casing shall be a minimum of 2" larger in diameter than the PVC casing and shall overlap the PVC casing. The protective steel casing shall extend at least six inches above the top of the plastic well casing and shall be sealed at least four feet into the ground within the annular seal and shall be fitted with a lid; or
(b) By use of a wellhead bunker. The bunker shall be made of concrete, hard plastic, fiberglass, wood or other structurally sound material that will protect the casing from both physical damage and ultraviolet light damage. The bunker shall completely surround the well and be fitted with a lid. The bunker shall be constructed so that access to the wellhead is maintained; or

(c) By other appropriate methods as approved in advance by the Water Resources Department.

(5) Pitless adaptors or units are not recommended in conjunction with PVC casing. If a pitless adaptor or unit is to be used, the constructor should take care that the weight of the pump and pump column do not exceed the strength of the casing.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0031; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0220
Plastic Casing Joints

All plastic casing joints shall be watertight. Either "bell" type, threaded, or coupling hubs are approved. Hub couplings shall be of material meeting the specifications for plastic casings as set forth in OAR 690-210-0210. Joints shall be made by solvent cement in accordance with manufacturer's directions. Newly assembled joints require careful handling until the initial set has taken place, which varies with the temperature and the pipe size. The recommended initial set times are from manufacturer's recommendations (See Table 210-4).

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0036; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15

690-210-0230
Inner Casing

Inner casing installed into a well must meet the minimum requirements of well casing (OAR 690-210-0190). The space between the two well casings shall be sealed so as to prevent the movement of water between the two casings. Inner casing installed in a well shall extend or telescope at least eight feet into the lower end of the well casing. The inner casing must be centered and must be a minimum of one inch smaller in diameter than the outer casing if an under reaming method system is used. If other methods are used, the inner casing must be a minimum of two inches smaller in diameter than the outer casing. The grout must be placed in a positive manner in accordance with method A, B, D, or E (see Appendix 210-3).

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-02310; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 5-2015, f. & cert. ef. 7-1-15

690-210-0240
Casing Shall be Centered

In all instances, casings shall be centered in sealed intervals. Casing centralizers may be used to ensure centering. When sealing a well by Method E, casing centralizers shall be used. (See Figure 210-11, 1986)

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0250
Top Terminal Height

(1) The casing head or pitless unit of any well shall extend a minimum of 12 inches above the finished ground surface or pumphouse floor, and a minimum of 12 inches above the local surface runoff level. The ground surface immediately surrounding the top of the well casing or pitless unit should be graded so as to drain surface water away from the well. Without permission of the Director, no casing shall be cut off below land surface except to install a pitless unit or during permanent abandonment of a well.

(2) Application to the Director to reduce the top terminal height of casing shall include:
(a) A description of physical characteristics of the well site which make the requested change necessary; and
(b) A description of additional steps to be taken over and above the minimum standards in these rules which will assure adequate protection of the ground water resource.

(3) The Director may approve a reduction of the top terminal height of the casing only upon a determination that the additional precautions to be taken and specific physical characteristics of the site would prevent contamination of the ground water resource.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0041; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-

15-01

690-210-0260
Openings in the Casing

There shall be no opening in the casing wall between the top of the casing and the bottom of the required casing seal except for pitless adapters, measurement access ports, and grout nipples installed in conformance with these standards. In no case shall holes be cut in the casing wall for the purpose of lifting or lowering casing into the well bore unless such holes are properly welded closed and watertight prior to placement into the well bore.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0046

690-210-0270
Pitless Well Adapters and Units

Surface seal requirements for well casing set forth herein shall also apply when a pitless adapter or unit is installed in a well. The seal shall cover that interval occupied by the pitless case from the point of casing connection to land surface. A cement grout seal shall not be allowed within the pitless unit or pitless adaptor sealing interval. The pitless adapter or unit sealing interval shall be sealed with unhydrated bentonite as described in OAR 690-210-0330 and 690-210-0340. The pitless adapter or unit, including the cap or cover, pitless case and other attachments, shall be designed and constructed to be watertight to prevent the entrance of contaminants into the well from surface or near-surface sources. Pitless units shall be vented to the atmosphere. Refer to OAR 690-210-0210 if the pitless adaptor or unit is to be used in conjunction with PVC casing. **NOTE**: Prior to installing pitless well adapters or units on public, community, municipal, or public utility water supply wells, contact the Department of Human Resources. (See references to Health Division regulation in Appendix 210-1).

[ED. NOTE: Appendices referenced are not included in rule text. Click here for PDF copy of appendices.]

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-051; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15

690-210-0280
Access Ports, Dedicated Measuring Tubes and Airlines

(1) All water supply wells, including wells that have been temporarily removed from service,

temporarily abandoned due to a recess in construction, or temporarily abandoned before commencing service, shall be properly covered and shall be equipped with a usable access port with a minimum diameter of 1/2-inch for the purpose of determining the water level in the well at any time.

(2) Access ports shall be installed prior to the Water Supply Well Constructor removing the well drilling machine from the well site.

(3) Dedicated measuring tubes that meet the requirements of OAR 690-215-0060 are recommended to be installed on all water supply wells at the time of pump installation, pump repair, or pump replacement. Where required, dedicated measuring tubes shall be a minimum of 3/4-inch diameter schedule 40 PVC extending to the top of the pump (See Figure 200-5). The 3/4-inch diameter dedicated measuring tube may be reduced in size to 1/2-inch where it goes through the watertight well cap, but shall not be reduced in size over the length of the pipe.

(4) An airline is not a substitute for a required dedicated measuring tube and, if installed, must enter the well in a location other than the access port.

(5) Access ports, dedicated measuring tubes or airlines on all water supply wells shall be capped and be a minimum of twelve inches above finished ground surface or pumphouse floor (See Figure 210-12) (See Figure 200-5).

(6) Access ports, airlines and dedicated measuring tubes on all water supply wells shall be maintained by the landowner in a condition that will prevent contamination of the ground-water resource, and shall remain free from wire or other obstruction.

[ED. NOTE: Figures referenced are available from the agency.]

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

Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 2-2008, f. 6-18-08, cert. ef. 7-1-08; WRD 8-2016, f. & cert. ef. 9-6-16

690-210-0290
Liner Pipe

Liner pipe installed through caving formations and installed without driving, may be of lighter weight than specified by Table 210-2 under OAR 690-210-0190. Such lightweight pipe shall have a wall thickness equal to or greater than 0.188 inch. All liner pipe shall be of steel, in new or like new condition, being free of pits or breaks; or shall be of polymerized vinyl chloride (PVC) type 1220 or 1120 and SDR 26 (Class 160) or greater wall thickness. Liner pipe installed in a well shall extend or telescope at least eight feet into the lower end of the well casing. In the event that more than one string of liner pipe is installed, each string shall extend or telescope at

least eight feet into the adjacent larger diameter liner pipe. Liner pipe shall be removable. Liner pipe may be welded or hooked onto the permanent well casing but shall not be permanently fixed to a well casing or borehole wall using packers or grout which would prohibit the liner's removal. (See Inner Casing, OAR 690-210-0230.)

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0011; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0300
Drill Cuttings or Chips

In no case shall drill cuttings or drill chips be used or allowed to fill, partially fill, or fall into the required sealing interval of a well during the construction or the completion of a well.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-61-110

690-210-0310
Cement Grout

When using cement grout as the sealing material in a well, it must meet the following requirements:
(1) Cement grout used to seal a well shall be composed of a uniformly mixed slurry of Portland cement or High Early Strength Type III Portland cement and potable water, or High-alumina cement and potable water, mixed in the following proportions (Type of Cement — Gallons of Water Per Sack of Dry Cement, respectively):

(a) Portland Cement — 4-1/2 to 6;
(b) High Early Strength Type III Portland Cement — 5-1/2 to 6-1/2;
(c) High-alumina Cement — 4-1/2 to 6.

(2) Additives to increase fluidity, reduce shrinkage, or control time of set may be used in a cement grout mixture. Expanding agents such as aluminum powder may be used at a rate not exceeding 0.075 ounce (one level teaspoonful) per sack of dry cement. The powder shall not contain polishing agents. The addition of bentonite clay to a cement grout mixture is permissible but shall not in any case exceed five percent (5%) by weight of dry cement. Calcium chloride may be added to a Portland cement grout to accelerate the set but shall not exceed two pounds per sack of dry cement. High-alumina cement and Portland cement of any type shall not be mixed together for use in a well.

(3) Cement types other than those set forth herein shall not be used as a sealing material in a well except upon written approval of the Director of the Water Resources Department.

(4) In no case shall sand or aggregate be added to cement grout seal mixtures.

(5) The volume of sealing material required shall be calculated prior to seal installation. The calculated volume and actual volume used shall be reported on the water supply well report.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0086; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 3-2014, f. & cert. ef. 11-25-14

690-210-0315
Concrete

Concrete for use in the construction of a dug well, or for filling the annular space or well bore of a well, shall consist of clean, hard, and durable aggregate, and not less than five sacks of Portland cement per cubic yard of concrete. Concrete will be allowed only when the oversize drill hole is a minimum of eight inches larger in diameter than the well casing used in construction of the well. The maximum diameter of aggregate particles shall not exceed 1-1/2 inches, but, in any case, shall not exceed 1/5 or 20 percent of the minimum width of the space to be filled. The ratio of coarse aggregate to fine aggregate (Passing No. 4, U.S. Standard Sieve) shall be approximately 1-1/2 to 1 by volume, but, in any case, shall not exceed 2 to 1 nor be less than 1 to 2.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0211; WRD 7-1988, f. & cert. ef. 6-29-88, Renumbered from 690-0210-0430

690-210-0320
Methods of Placement of Cement Grout or Concrete

Cement grout or concrete used as a sealing material in a well shall be placed or forced upward from the bottom to completely fill the annular space to be grouted and shall be placed in one continuous operation without significant interruption. If temporary outer surface casing is used in the construction of the well, it shall be withdrawn as the grout or concrete is placed. (For acceptable methods of placement, see Appendix 210-3 and Figure 210-1, 1986).

Instructions: Separately attached PDF of Appendix 210-3 is referenced in OAR 690-210-0320 and is available from the agency.

[ED. NOTE: Figures and Appendices referenced are available from the agency.]

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0021 & 690-061-0096; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15; WRD 5-2016, f. & cert. ef. 9-6-16

690-210-0340
Method of Placement of Unhydrated Bentonite

(1) An upper oversize drillhole, four inches greater than the nominal inside diameter of the permanent well casing, shall be constructed to a minimum depth of 18 feet below land surface. The use of unhydrated bentonite as a casing seal shall not be allowed deeper than 200 feet below land surface. In the event that the materials penetrated by the oversize drillhole cave, or tend to cave, an outer temporary surface casing shall be used to case out the caving materials during construction of the oversize drillhole. The outer temporary surface casing shall be removed during seal installation and before completion of the well.

(2) In the event groundwater is encountered during the construction of the oversize drillhole, only unhydrated bentonite chips manufactured to be 3/8 inch to 3/4 inch, pellets or tablets shall be allowed in the water-filled portion of the annulus. A maximum of 50 feet of water may be present in the sealing interval. Unhydrated bentonite shall be screened across a minimum 1/4 inch mesh screen prior to being placed in the water-filled portion of the annulus to minimize the introduction of bentonite dust into the seal interval. Unhydrated bentonite shall not be used:

(a) In the water-filled portion of a temporary casing; or
(b) If there is any uphole flow in the annular seal interval.

(3) Unhydrated bentonite may only be used as an annular seal material below the water level in a well when the groundwater it comes in contact with does not exceed 800 parts per million (ppm) total dissolved solids (TDS).

(a) Unhydrated bentonite may be used as an annular seal material in 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.

(A) Prior Department approval is required before placement.
(B) 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.
(c) Regardless of the reported TDS, the quality of the water in the well shall not interfere with the proper hydration of bentonite.

(4) After placement of the permanent casing, the annular space shall be filled to land surface with bentonite. The annular space shall be kept full of bentonite to land surface while drilling or driving casing. A calibrated sounding tape with weight shall be used continuously in the sealing interval during bentonite placement to measure fill rate and to check for and break up possible

bridges.

(5) Placement of bentonite shall conform to the manufacturer's specifications and result in a seal that is free of voids or bridges. Care shall be taken to minimize the introduction of bentonite dust into the sealing interval.

(6) The volume of sealing material required shall be calculated prior to seal installation. The calculated volume and actual volume used shall be reported on the water supply well report.

(7) Unhydrated bentonite chip, pellet or tablet annular seals shall be hydrated from land surface with potable water prior to removing the drilling machine from the well site. The hydration shall begin once all of the bentonite annular seal material has been placed and shall end when the annular seal interval refuses to take more water or after at least one annular space volume of water has been placed.

(8) Granular bentonite may only be used as an annular seal material in a dry annular space above the interval where water was first encountered. Granular bentonite shall not be screened or hydrated during placement.

(9) Pour rate shall be two minutes or slower per 50 pound sack in the water-filled portion of the annulus.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 12-1985, f. 12-6-85, ef. 12-7-85; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0097; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 3-2014, f. & cert. ef. 11-25-14

690-210-0350
Resumption of Construction Following Placement of Cement Grout

The time needed for the final set of a cement grout mixture varies greatly in accordance with cement-water ratio and temperature. When cement grout is used to seal a well, construction should not resume until after the final set of the cement grout mixture. Performance of all cement grout seals shall be the responsibility of the person responsible for the construction of the well. Under no circumstances shall construction resume within six hours of the placement of the cement grout seal. Recommended periods of time for the final set are:
(1) If Portland Cement is used — 72 hours;

(2) If High Early Strength Type III Portland Cement is used - 48 hours;

(3) If High-alumina Cement is used — 6 hours.

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

Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0101; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0360
Movement of Casing after Cement Grouting

In no case shall the permanent well casing be moved or driven following the placement and initial set of the cement grout.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0106

690-210-0370
Well Test

Upon completion, every well shall be tested for yield and drawdown either by bailing, pumping, or air testing for a period of not less than one hour. Any testing method that does not provide for drawdown measurements during testing is not an accurate or reliable test of yield.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0081; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0380
Disinfection of a Well

Prior to or after being placed in the well, pumping equipment, sand, gravel and well casing shall be thoroughly hosed or sluiced with water, and shall be disinfected with a solution containing at least 50 parts per million chlorine. All water introduced into a well during construction shall be clean and potable. Upon completion, the well and its equipment, including the interior of the well casing, shall be thoroughly swabbed and cleaned to remove all of the oil, grease, and foreign substances. The well and its equipment shall be disinfected by thoroughly agitating and mixing in the well a solution containing enough chlorine to leave a residual of 25 parts per million throughout the well after a period of 24 hours. Disinfection should also occur following the installation of pumping equipment. (See Chart Recommendations for Disinfection of Wells, Appendix 210-2).

NOTE: Other public agencies may have jurisdiction over the discharge of chlorine in certain areas. The constructor should contact the Oregon Department of Environmental Quality or the appropriate city public works department for further information.

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0116; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15

690-210-0390
Completion of Wells

A well constructor or permitted landowner constructing their own well shall not remove the drilling machine from a well site, unless it is immediately replaced by another drilling machine in operating condition prior to completion or abandonment of the water supply well in compliance with OAR 690-210-0005 through 690-220-0140.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0121; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-210-0400
Construction of Dug Wells

Dug wells that are 21 feet or less in depth shall be sealed with grout from land surface to within three feet of the bottom of the well. Dug wells greater than 21 feet in depth shall be sealed with grout from land surface to a depth of at least 18 feet below land surface. In all cases a watertight surface curbing shall extend from a minimum of 12 inches above land surface and continue the entire length of the sealed interval. Open wells, sometimes called sumps, which exceed ten feet in average diameter and are dug to a depth of ten feet or less are exempt from these construction requirements, but are subject to all the requirements covering the use of ground water (water right application).

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0196; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15

690-210-0410
Buried Slab Construction

In a buried slab type well, the slab shall be at least 18 feet below land surface and shall be at least three inches in thickness. The slab shall be reinforced to withstand all stresses. The slab shall be sealed with cement grout at least one foot thick, and the well bore backfilled with grout in

accordance with OAR 690-210-0300 through 690-210-0360. (See Figure 210-13).

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0206; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15

690-210-0420
Surface Curbing

(1) The surface curbing required in OAR 690-210-0400 shall be of concrete, concrete tile, or steel. If concrete is used, the concrete wall thickness shall not be less than six inches. In the case of buried slab type wells, well casing meeting the minimum specifications given in 690-210-0190 through 690-210-0220 shall be used. (See Figure 210-13.)

(2) If precast concrete tile or steel casing is used for the surface curbing, the well diameter to the bottom of the surface curbing shall be eight inches greater than the outside diameter of the tile or steel, and the annular space shall be completely filled with grout in accordance with OAR 690-210-0310 through 690-210-0340. (See Figure 210-13).

[ED. NOTE: Figures referenced are available from the agency.]
Stat. Auth.: ORS 183, 536, 537 & 540

Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0201; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 5-2015, f. & cert. ef. 7-1-15

APPENDIX 210-1

Additional Requirements by Other State Agencies of Oregon

In the administration of ORS 537.505 to 537.795, the Director of the Water Resources Department has statutory authority under the provisions of ORS 537.780 "to prescribe and enforce general standards for the construction and maintenance of wells and their casings, fittings, valves, and pumps..." Other agencies of the state have statutory responsibilities that relate either directly or indirectly to the construction and operation of public water supply systems and their source of water supply. These agencies and their responsibilities are listed as follows:

OREGON HEALTH AUTHORITY 800 NE Oregon Street Portland, OR 97232 (serving more than three single residents) www.oregon.gov/OHA/Pages/index.aspx	ORS Chapter 448	Municipal Water Supply Systems Public Water Supply Systems Community Water Supply Systems Source Water Protection
BUILDING CODES DIVISION 1535 Edgewater NW Salem, OR 97304-4635 www.cbs.state.or.us/bcd	ORS Chapter 446	Electrical and Plumbing for all Commercial Enterprises Mobile Home Park Water Supply Systems
OREGON PUBLIC UTILITY COMMISSION 550 Capitol St. NE Salem, OR 97301-2551 www.puc.state.or.us/	ORS Chapter 757	Private Owners (water supply systems, 200 homes or more)
DEPARTMENT OF ENVIRONMENTAL QUALITY 811 SW Sixth Ave. Portland, OR 97204-1390 www.oregon.gov/deq	ORS Chapter 468	Water Quality Monitoring Underground Injection Systems Source Water Protection
SECRETARY OF STATE CORPORATION DIVISION Business Services Division Public Service Bldg., Suite 180 Salem, OR 97310 www.sos.state.or.us		Business Registry for Water Districts

APPENDIX 1- CONTINUED

All wells constructed in Oregon, including those to serve as a source of ground water to municipal, community, public, or public utility water supply systems, must be constructed in accordance with the rules and regulations prescribing general standards for the construction and maintenance of wells in Oregon (OAR 690 Divisions 205, 210, 215, 220 and 240). Additional construction standards for water supply systems may be required by the above listed agencies. Such rules and regulations generally include the source of water supply to the systems and may affect well construction requirements. Copies of the various agency rules may be obtained by contacting the responsible agency. Well constructors planning to construct a well as a source of water supply for any of the above systems are advised to contact the responsible agency prior to the beginning of well construction.

APPENDIX 2

I. Recommendations For Disinfection of Wells (OAR 690-210-0380)

Every newly constructed, altered, or repaired well should be assumed to be contaminated by micro-organisms. Before the initiation of use, each well must be thoroughly and carefully cleaned and treated to ensure that all disease carrying organisms are eliminated. Care should be exercised to make certain that all areas of the well come into contact with a solution containing enough available chlorine to completely destroy all harmful bacteria. An initial chlorine concentration of 50 parts per million (ppm) with a residual chlorine requirement of 25 ppm after 24 hours is considered adequate for this purpose. Either domestic laundry bleaches containing sodium hypochlorite, such as Clorox or Purex, or calcium hypochlorite in powder or tablet form (Olin HTH) may be used.

Hypochlorite solutions should be thoroughly mixed throughout the well either by the use of drilling tools, a pump, or by placing a calculated number of HTH tablets at regular intervals on a nylon string and dissolving them in places throughout the well. In all cases, the well casing and pump column standing above the water table should be thoroughly cleaned of all grease and oil and should be carefully washed down with the hypochlorite solution.

The well should be allowed to remain undisturbed after the treatment for a period of 24 hours. Then it is recommended that the well be tested for residual chlorine (at least 25 ppm must remain). After successful treatment, all water remaining in the well and supply system should be run to waste and a sample of fresh water from the well tested by the local county sanitarian for bacteriological purity.

SOLUTIONS CONTAINING HYPOCHLORITES

Laundry Bleach

Common domestic laundry bleaches contain from 5.25 percent to 6.00 percent sodium hypochlorite. These amounts are equivalent to approximately 2.5 percent available chlorine or about 25,000 ppm as originally purchased. A one gallon container of liquid bleach mixed with 500 gallons of water will dilute the original solution to approximately 50 ppm available chlorine.

High-Test Hypochlorite Compounds

Calcium hypochlorite (Olin HTH) in powder or tablet form contains about 50 percent active chlorine. One ounce of dry HTH powder mixed with 75 gallons of water will result in a solution containing approximately 50 ppm available chlorine. Eight tablets V(1/8 oz. each) of HTH are equivalent to one ounce of dry powder or granules.

QUALITY OF HYPOCHLORITE NEEDED TO PROVIDE
50 PPM ACTIVE CHLORINE IN WELL WATER

(1) If using liquid bleaches, the following formula is applicable:

$$\frac{\text{Feet of water in well} \times \text{Gallons per foot}}{62} = \text{Pints of bleach needed}$$

Feet of water = Total depth of well minus static water level multiplied by gallons per foot (See Table II).

(2) If using HTH compounds, the following formula is applicable:

$$\frac{\text{Feet of water} \times \text{Gallons per foot}}{75} = \text{Ounces HTH needed}$$

(3) If HTH tablets are used:

$$\frac{\text{Feet of water} \times \text{Gallons per foot}}{9} = \text{Number of 1/8 oz. tablets needed}$$

WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 210
WELL CONSTRUCTION STANDARDS

APPENDIX 210-3

I. Recommended Methods of Placement of Cement Grout (OAR 690-210-0320)

Method A - The well bore shall be plugged with a drillable plug or bridge at the lowest point to be sealed. A well casing with a float shoe at its lower end shall be placed in the well and suspended slightly above the point of bearing. A grout pipe shall be run inside the casing to the check valve. The grout pipe shall be connected to a suitable pump and water or drilling fluid shall first be circulated to clear the annular space. Grout shall be pumped through the grout pipe until clean grout completely fills the interval to be sealed. The grout pipe shall then be removed and the cement allowed to set. (See Figure 210-1)

Method B - Grout shall be placed by pumping or air pressure injection through a grout pipe installed inside the casing from the casing head to a point five (5) feet above the bottom of the casing. The grout pipe shall extend through an airtight sealed cap on the head of the well casing. The casing head shall be equipped with a relief valve and the grout pipe shall be equipped at the top with a valve permitting injection. The lower end of the grout pipe and the casing shall be open. Clean water shall be injected down the grout pipe until it returns through the casing head's relief valve. The relief valve is then closed and injection of water is continued to clean the hole until it flows from the bore hole outside the casing that is to be grouted in place. Without significant interruption, grout shall be substituted to water and, in a continuous manner, injected down the grout pipe until it returns to the surface outside of the casing. A small amount of water may be used to flush the grout pipe, but the pressure should remain constant on the inside of the grout pipe and the inside of the casing until the grout has set. Pressure shall be maintained for at least twenty-four (24) hours, or until such time as a sample of the grout indicates a satisfactory set. Cement grout shall be used for this procedure with a minimum annular space of one (1) inch completely surrounding the casing. (See Figure 210-1)

Method C - The well bore shall be plugged with a drillable plug or bridge at the lowest point to be sealed. The well casing shall be firmly seated at the bottom of the drillhole. A grout pipe shall be run to the bottom of the hole through the annular space between the casing and the well bore. After water or any other drilling fluid has been circulated in the annular space sufficiently to clear obstructions, the grout pipe shall be connected to a suitable pump and grout shall be pumped through the grout pipe until clean grout is circulated to land surface, or until grout completely fills the interval to be sealed. The lower end of the grout pipe shall remain submerged in grout while grout is being placed. The grout pipe shall be withdrawn before the initial set of the grout. (See Figure 210-1)

Method D - The well bore shall be plugged with a drillable plug or bridge at the lowest point to

be sealed. After the casing is run and landed, a casing plug, having a length greater than the diameter of the casing, shall be placed in the casing. If the drillhole is free of mud or water, this lower separation plug may be eliminated. A measured amount of cement grout necessary to completely fill the annular space of the interval to be grouted is pumped or placed by bailer in the casing. A second casing plug, having a length greater that the diameter of the casing, shall be placed in the casing above the grout. The casing shall then be capped with a pressure cap and shut-off valve, and shall be connected to a suitable pump. The casing shall then be raised far enough above the point of bearing to clear the first separation plug. Water or drilling mud shall then be pumped under pressure into the casing forcing the grout and upper casing plug down the casing. The position of the plug must be known at all times. A small amount of grout may remain in the lower end of the casing. When the plug reaches the point desired above the bottom of the casing, the pump shall be stopped and the casing seated. (See Figure 210-1)

Method E - The well bore shall be plugged with a drillable plug or bridge at the lowest point to be sealed. A sufficient amount of cement grout to completely fill the interval of the well to be sealed shall be placed at the bottom of the drillhole by pump bailer or grout pipe. The well casing shall have centering guides attached at appropriate intervals to keep the casing centered in the bore hole. The bottom of the well casing shall be fitted with a tight drillable plug and shall be lowered into the drillhole forcing the grout upward into the annular space. Gravity installation without the aid of a grout pipe shall not be used. In no instance shall this method be used deeper than thirty (30) feet and in no case for a municipal, community, or public water supply well. (See Figure 210-1)

TABLE 210-1
(690-210-0180)
(Specifications for Drive Pipe)

Nominal Size (inches)	Outside Diameter (inches)	Wall Thickness (inches)	Weight Per Foot (pounds)
1-1/2	1.900	0.145	2.72
2	2.375	0.154	3.65
2-1/2	2.875	0.203	5.79
3	3.500	0.216	7.58
3-1/2	4.000	0.226	9.11

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690, DIVISION 210
WELL CONSTRUCTION STANDARDS

TABLE 210-2

(Minimum specifications for steel well casing)

Nominal Size (inches)	Outside Diameter (inches)	Wall Thickness (inches)	Weight Per Foot (pounds)
2	2.375	.154	3.65
2-1/2	2.875	.203	5.79
3	3.500	.216	7.58
3-1/2	4.000	.226	9.11
4	4.500	.237	10.79
5	5.563	.244	13.70
6	6.625	.250	17.02
8	8.625	.250	22.36
10	10.750	.250	28.04
*12	12.750	.312	41.45
*14	14.000	.312	45.68
*16	16.000	.312	52.27
*18	18.000	.375	70.59
*20	20.000	.375	78.60

* Note: Steel casing installed in a well greater than a nominal diameter of ten (10) inches, having a wall thickness of .250 inch and meeting ASTM A-53 A or B specifications must not exceed the following depth limitations (Diameter - Maximum Depth, respectively):

1. 12 inches - 500 feet
2. 14 - 16 inches - 250 feet
3. 18 - 20 inches - 100 feet

Table 210-3
Capacity of Drillhole or Casing

Nominal Size (in inches)	Gallons per Linear Foot
2	0.163
4	0.653
5	1.020
6	1.469
7	1.999
8	2.611
9	3.305
10	4.080
11	4.937
12	5.875
14	7.997
16	10.445
18	13.219
20	16.320
24	23.501

Table 210-4
Set time for plastic casing joints

Temperature Range During Initial Set Time	Set Time for Various Pipe Sizes In Hours					
	3"	4"	6"	8"	10"	12"
60 F - 100 F	1/2	1/2	1/2	3/4	3/4	1
40 F - 60 F	2	2	4	4	4	4
0 F - 40 F	6	6	8	10	12	12

NOTE: After the initial set, the joints will withstand the stress of a normal installation. However, considerable care should be employed in handling the string.

CEMENT GROUT PLACEMENT
(OAR 690-210-0320)

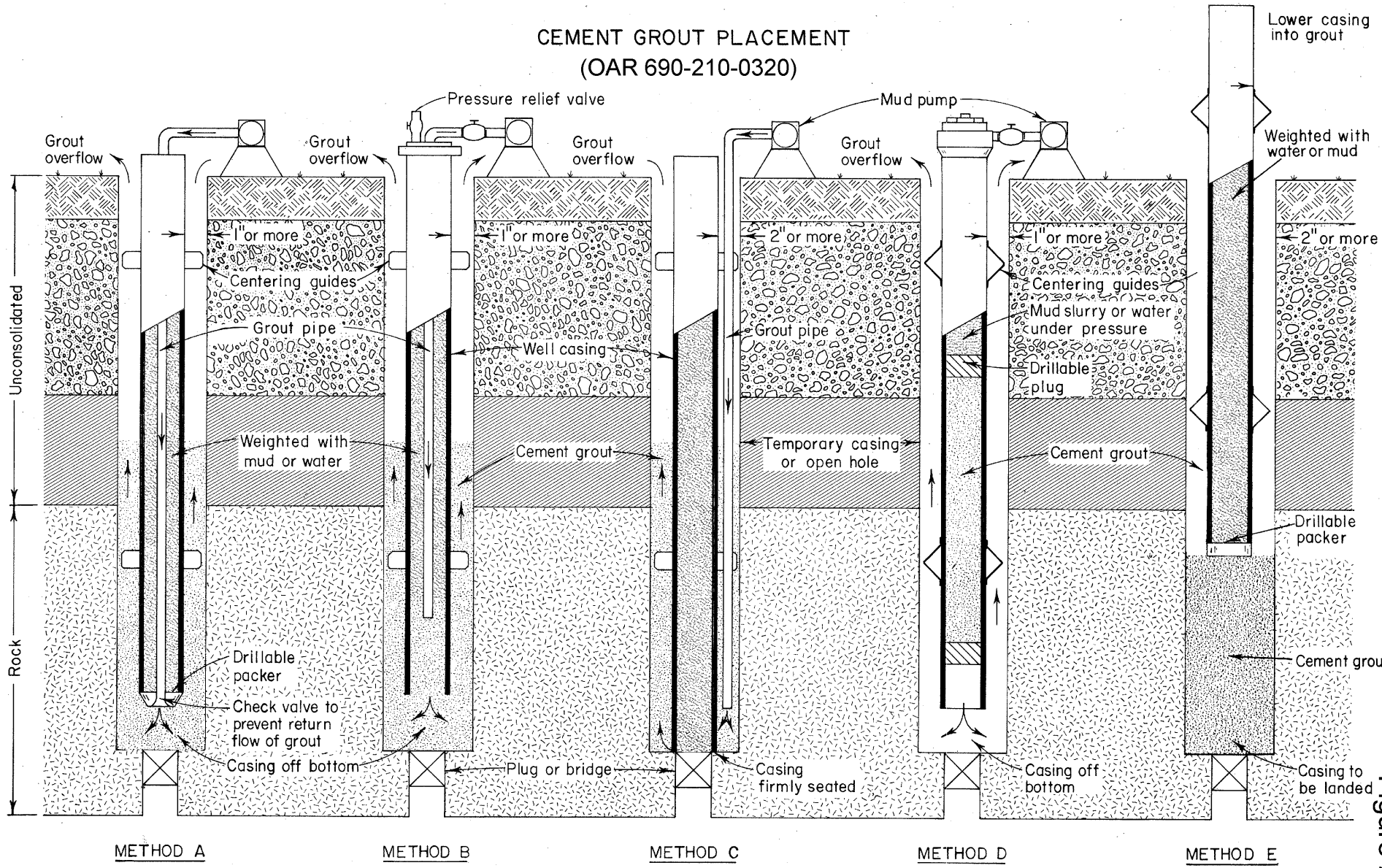


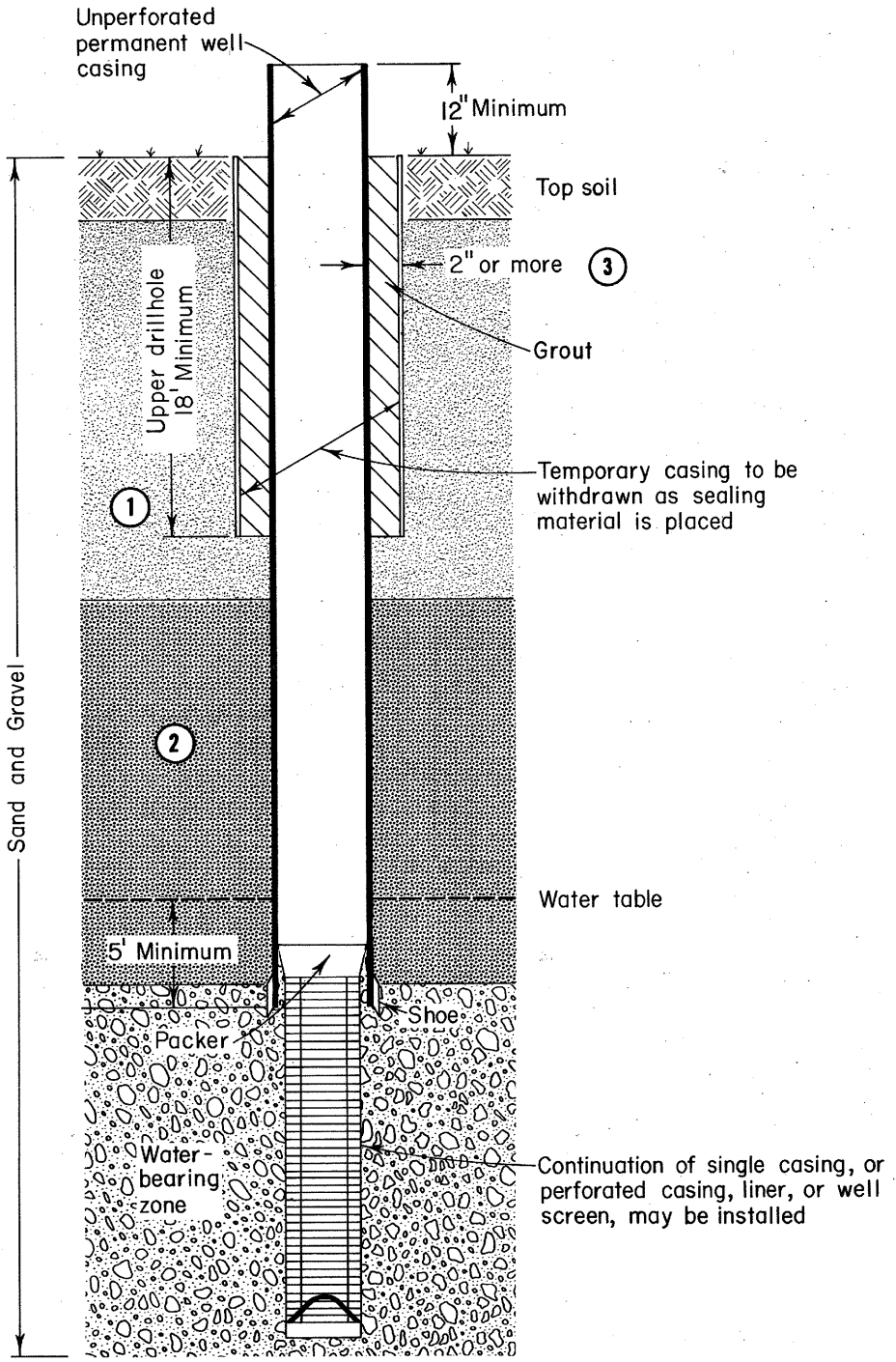
Figure 210-1

Figure 210-2

SEALING OF WATER SUPPLY WELLS IN UNCONSOLIDATED FORMATIONS WITHOUT SIGNIFICANT CLAY BEDS (OAR 690-210-0130)

Overlying Material - Sand and Gravel without Clay

Water-bearing Formation - Sand and Gravel or Similar

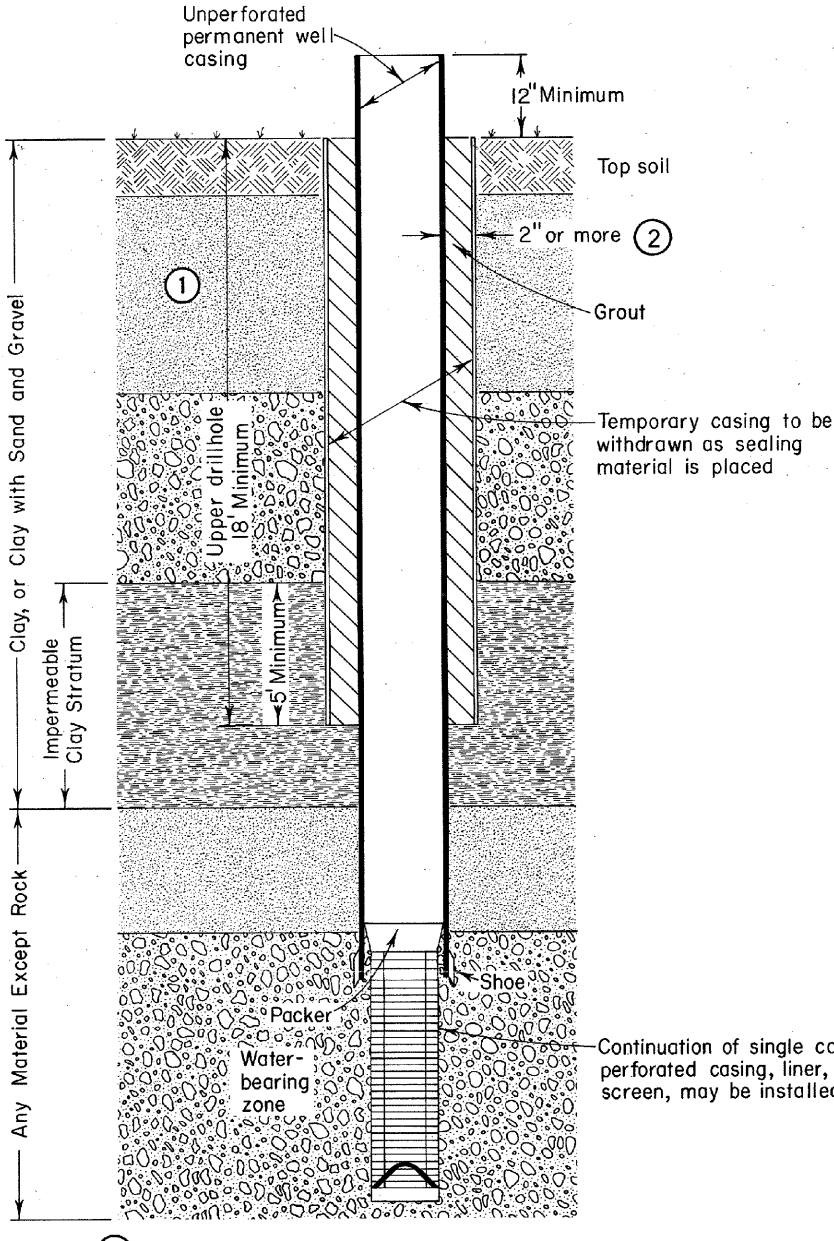


1. Upper oversize drillhole and annular seal must extend to a depth of at least 18 feet.
2. Unperforated watertight well casing must extend at least 5 feet below the water table and to a minimum depth of 18 feet.
3. Annualar sealing space requirements are based on nominal casing sizes

SEALING OF WATER SUPPLY WELLS IN UNCONSOLIDATED FORMATIONS WITH SIGNIFICANT CLAY BEDS (OAR 690-210-0140)

Overlying Material – Clay, or Sand and Gravel with Interbedded Clay

Water-bearing Formation – Any Material Except Rock



(1) Unperforated well casing and annular seal must extend at least 5 feet into impermeable stratum, and must extend at least 18 feet below land surface.

(2) 1" or more if cement grout is placed by grouting method A, B, or D. Annualar sealing space requirements are based on nominal casing sizes

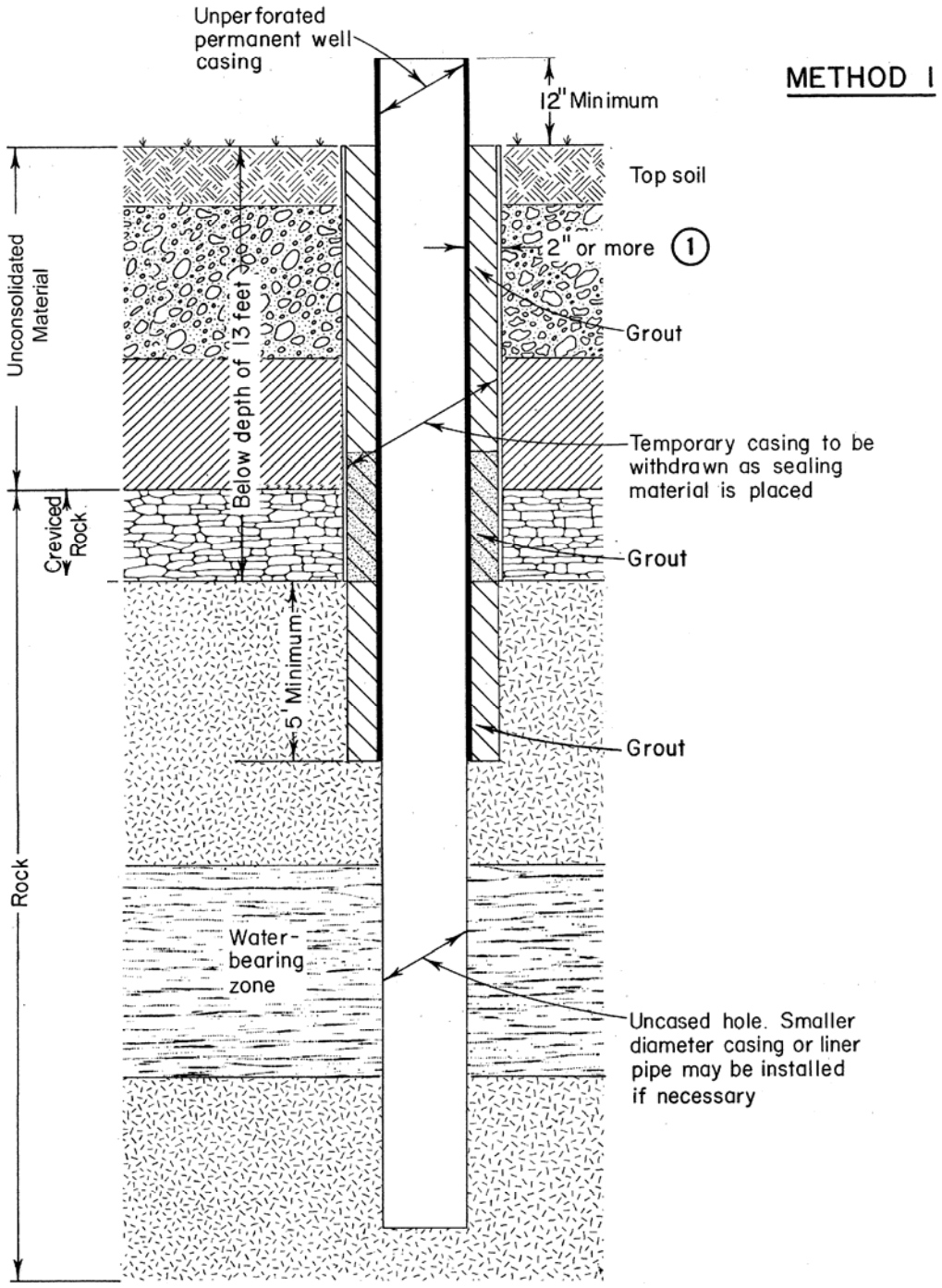
Water-bearing Formation — Rock

Figure 210-4

SEALING OF WATER SUPPLY WELLS
IN CONSOLIDATED FORMATIONS
(OAR 690-210-0150)

Overlying Material – Unconsolidated Material

Water-bearing Formation – Rock

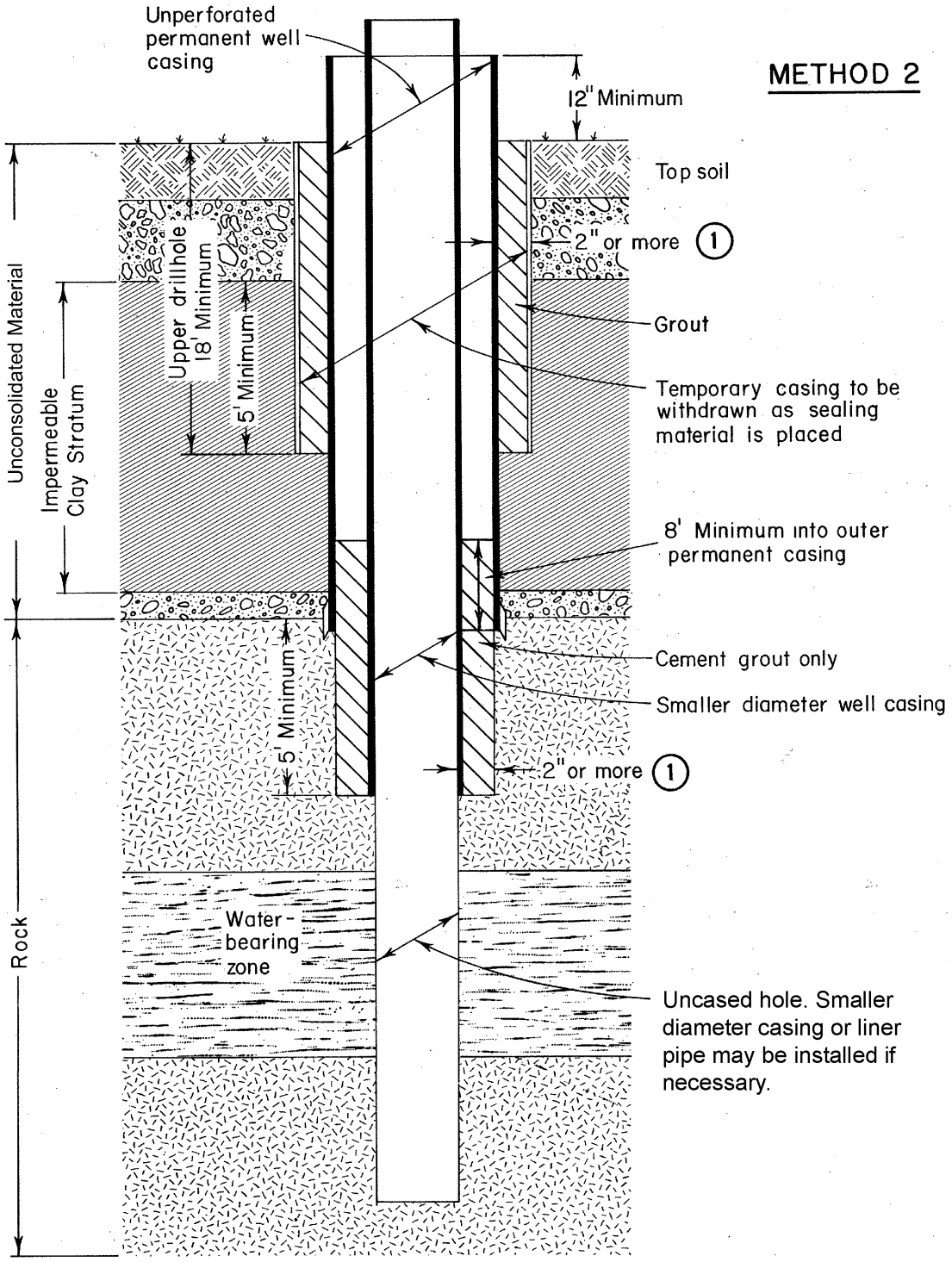


(1) 1" or more if cement grout is placed by grouting method A, B, or D.
Annular sealing space requirements are based on nominal casing sizes.

SEALING OF WATER SUPPLY WELLS IN CONSOLIDATED FORMATIONS (OAR 690-210-0150)

Overlying Material – Unconsolidated Material

Water-bearing Formation – Rock



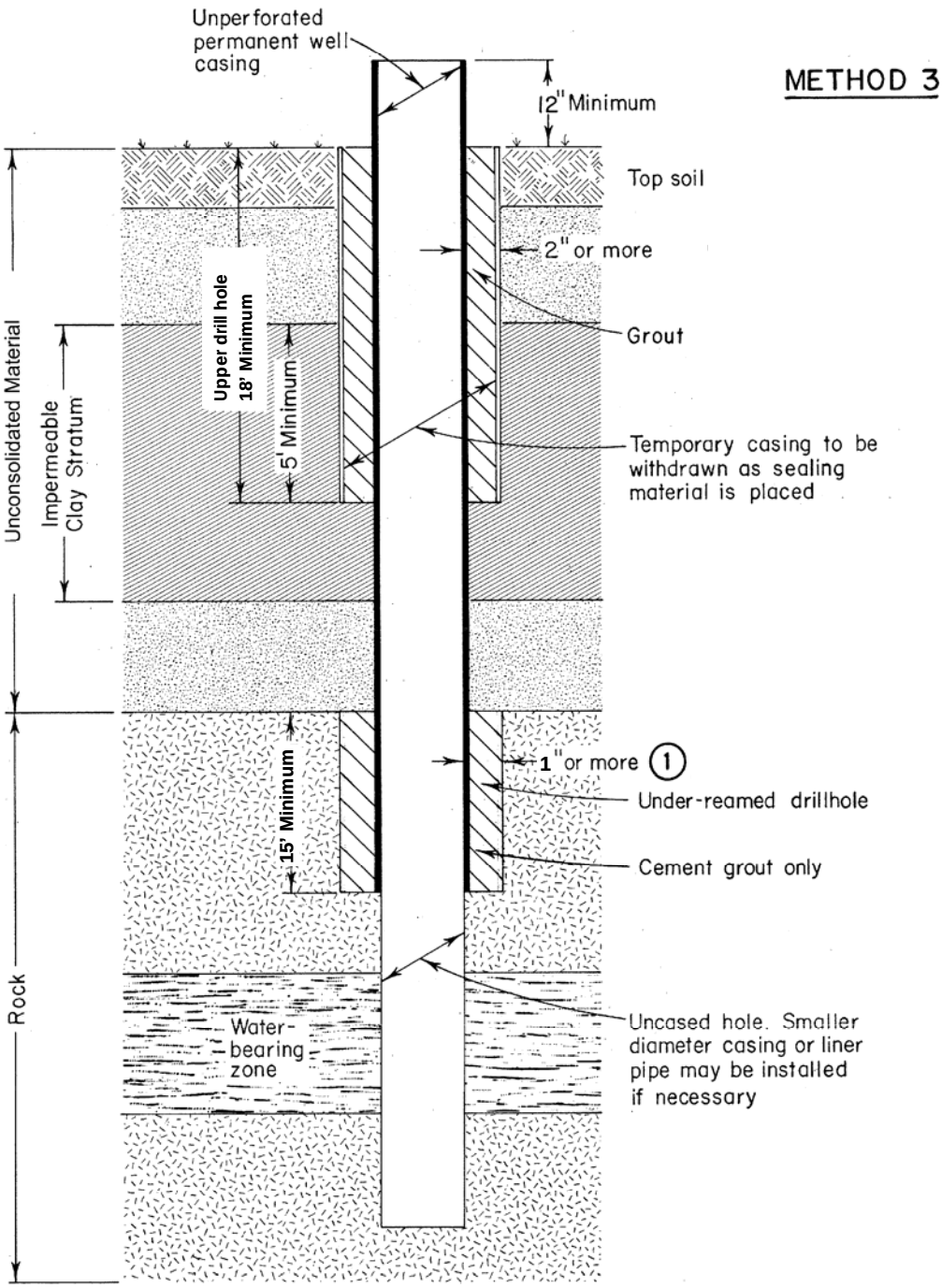
(1) 1" or more if cement grout is placed by grouting method A, B, or D. Annular sealing space requirements are based on nominal casing sizes.

Water-bearing Formation — Rock

Figure 210-6

SEALING OF WATER SUPPLY WELLS
IN CONSOLIDATED FORMATIONS
(OAR 690-210-0150)

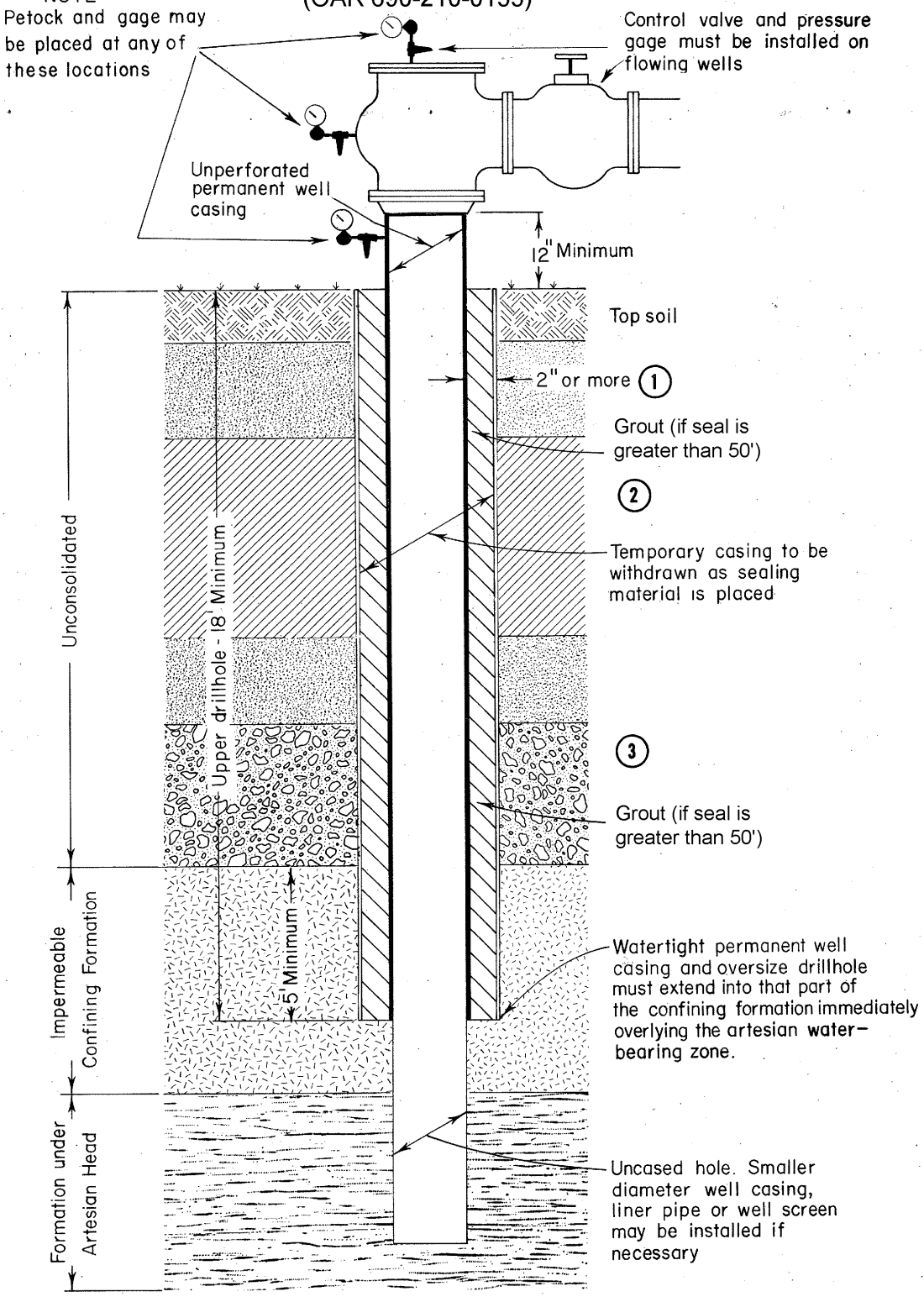
Overlying Material – Unconsolidated Material
Water-bearing Formation – Rock



(1) 1" or more if cement grout is placed by grouting method A, B, or D.
Annular sealing space requirements are based on nominal casing sizes.

Figure 210-7

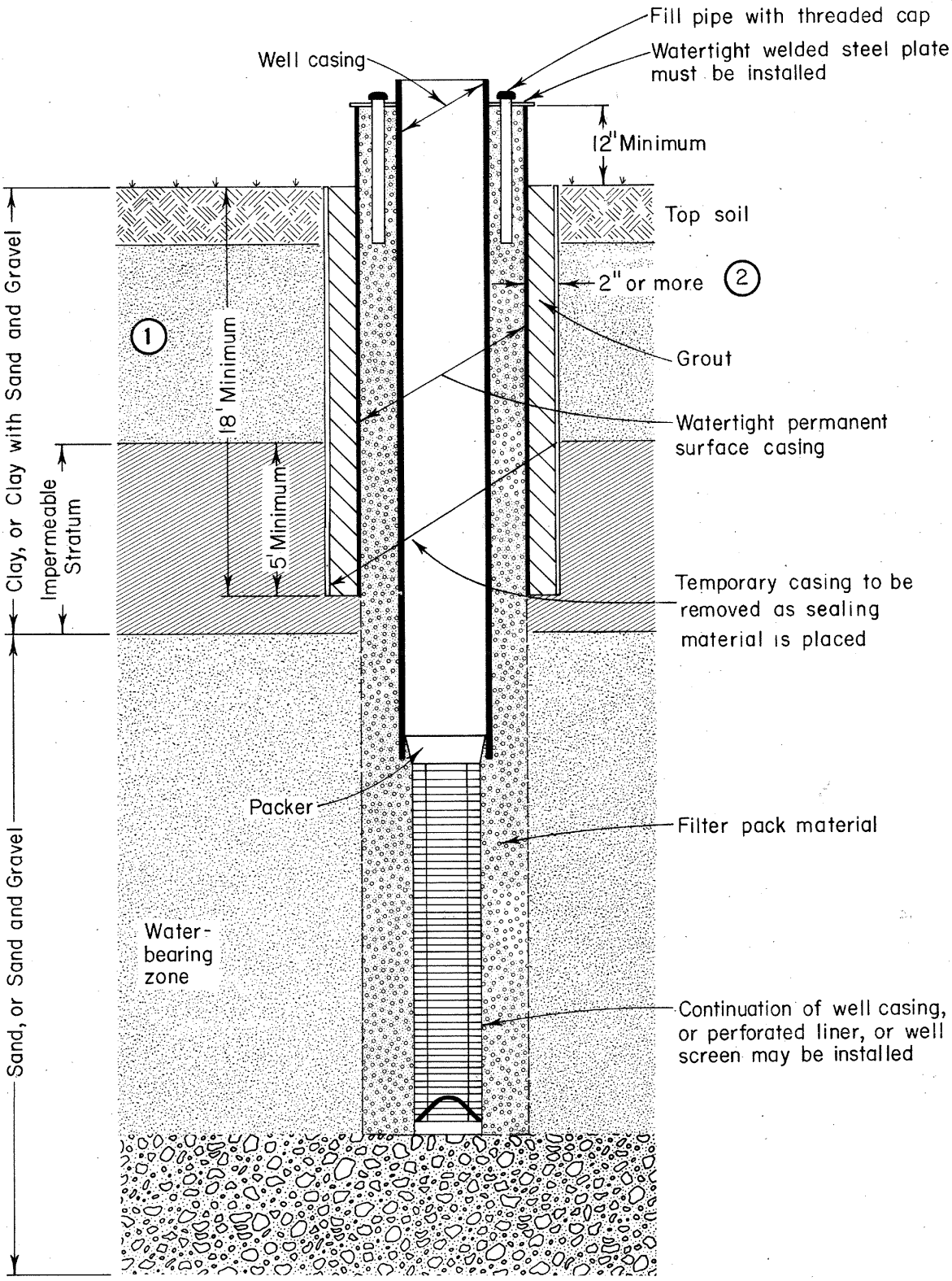
SEALING OF AN ARTESIAN WELL
(OAR 690-210-0155)



1. 1" or more if cement grout is placed by grouting method A, B, or D. Annular sealing space requirements are based on nominal casing sizes.
2. Well must not be constructed in a manner that will allow water from an artesian zone to commingle with other confined or unconfined water-bearing zones.
3. Must be completed with the seals, packers, or casing necessary to eliminate subsurface or surface leakage.

SEALING OF A FILTER PACKED WELL WITH SURFACE CASING

(OAR 690-210-0160)



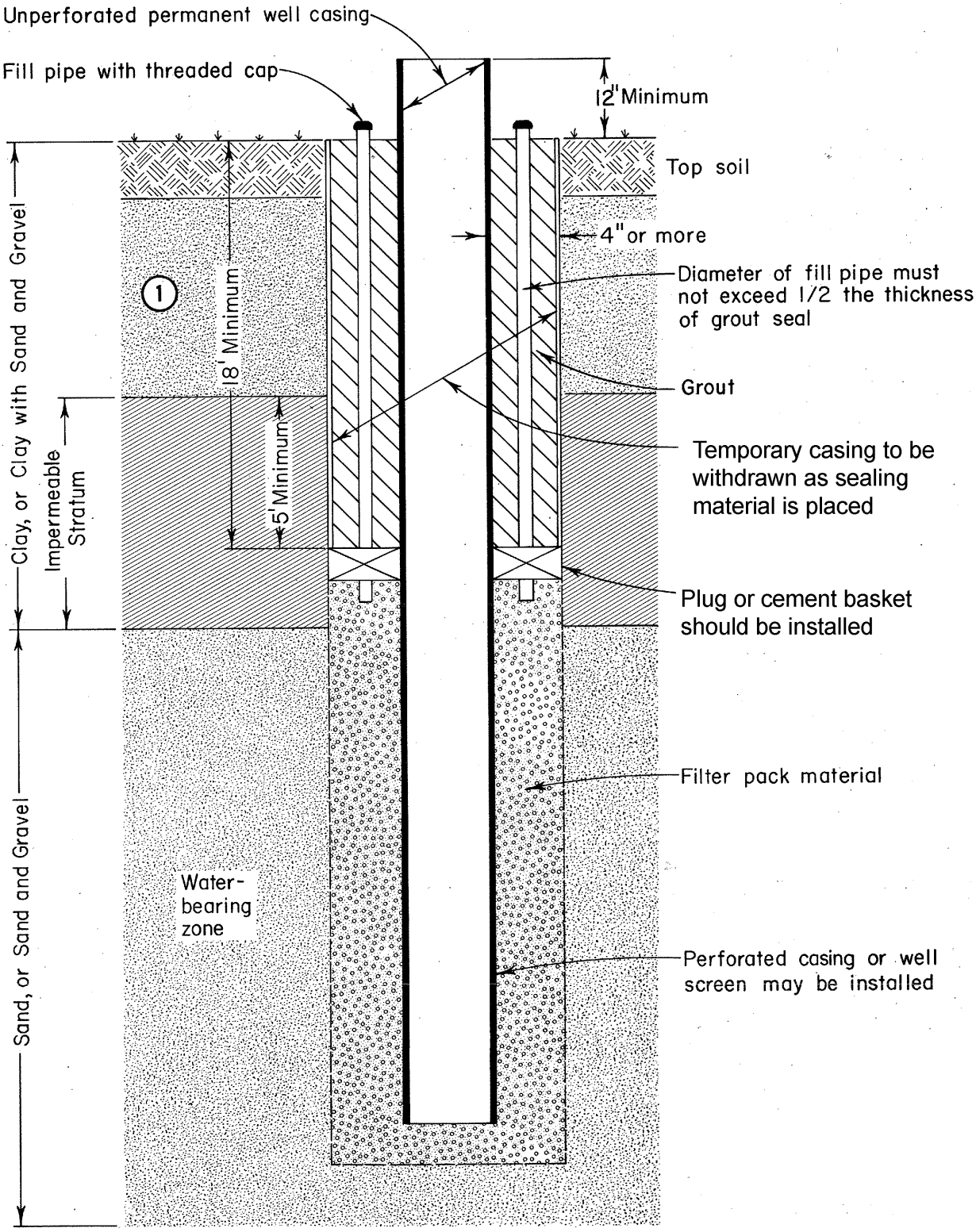
1 Minimum of 18 feet provided that the impermeable stratum is at or near land surface.

2 Annular sealing space requirements are based on nominal casing size.

Figure 210-9

SEALING OF A FILTER-PACKED WELL WITHOUT SURFACE CASING

(OAR 690-210-0170)

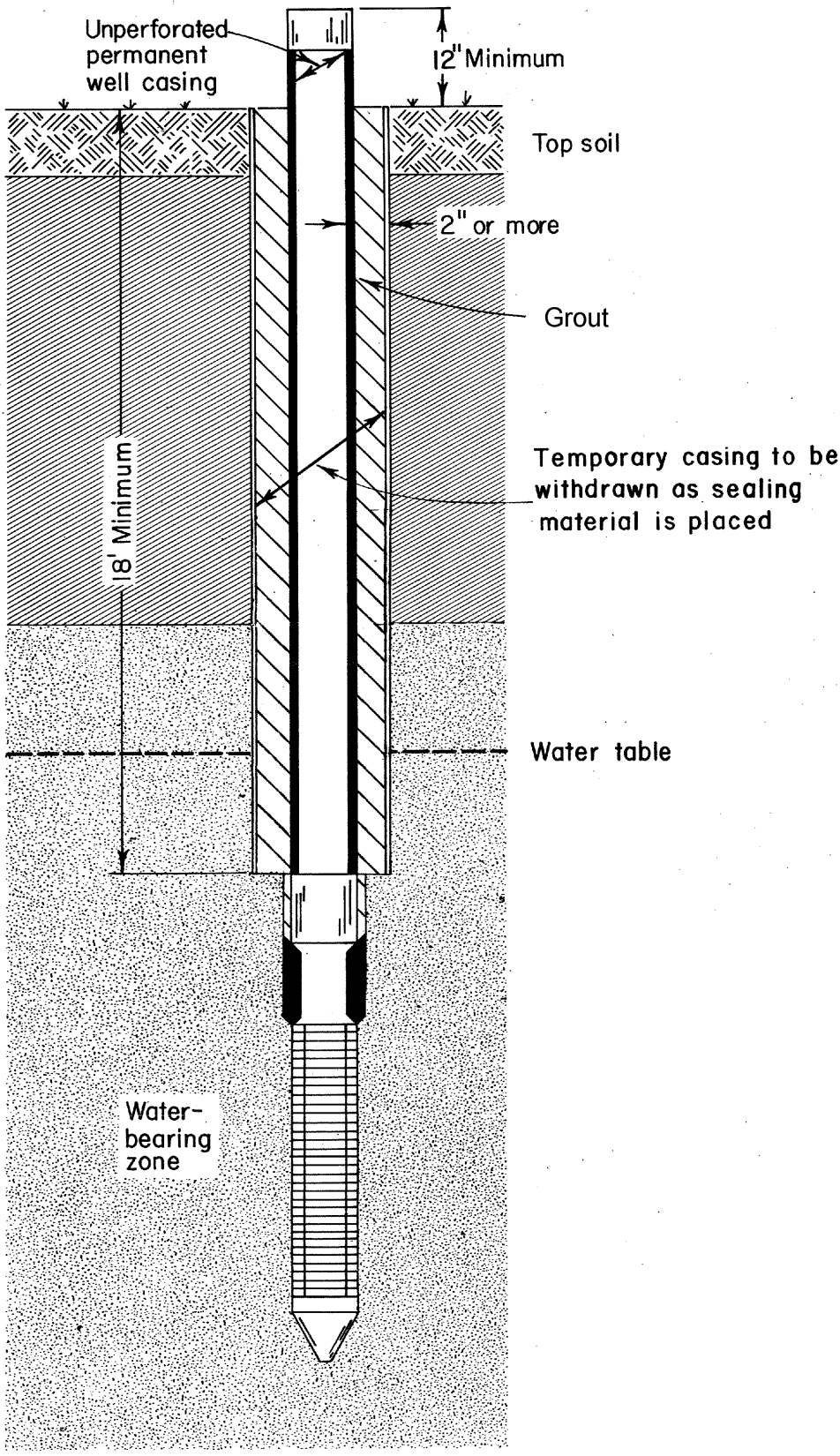


(1) Minimum of 18 feet provided that the impermeable stratum is at or near land surface.

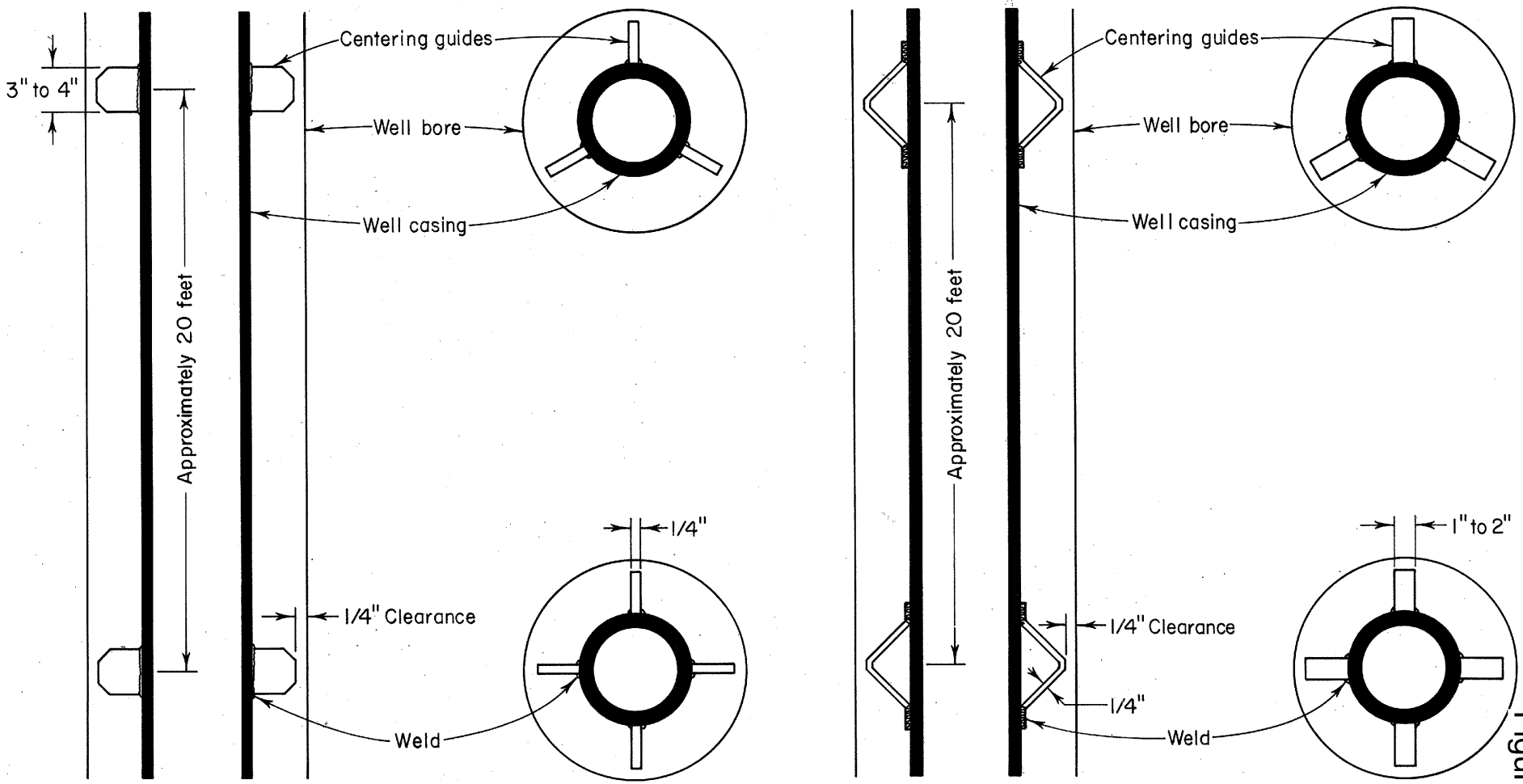
OWRD-2001

SEALING OF A DRIVEN OR JETTED WELL

(OAR 690-210-0180)



RECOMMENDED USE OF CENTERING GUIDES
(OAR 690-210-0240)



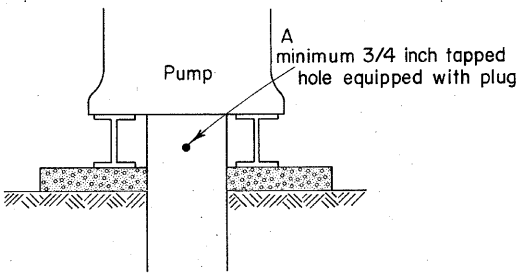
NOTE: Well casing, to be sealed into an oversize drillhole, should be equipped with a series of centering guides to insure proper centering of casing. Guides should be evenly spaced in groups of 3 or 4, and attached to the casing.

Figure 210-11

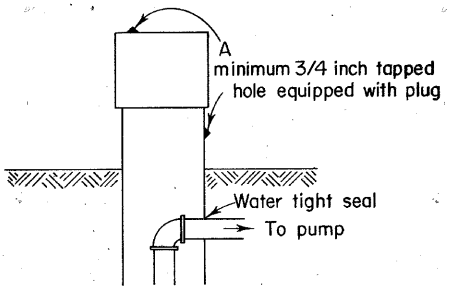
Figure 210-12

SUGGESTED METHODS OF INSTALLING ACCESS PORTS, PRESSURE GAUGES, AND AIR LINES FOR MEASURING WATER LEVELS IN WELLS

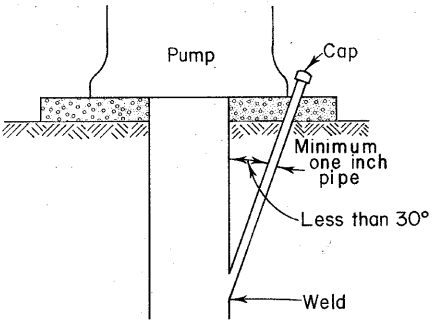
(OAR 690-210-0280)



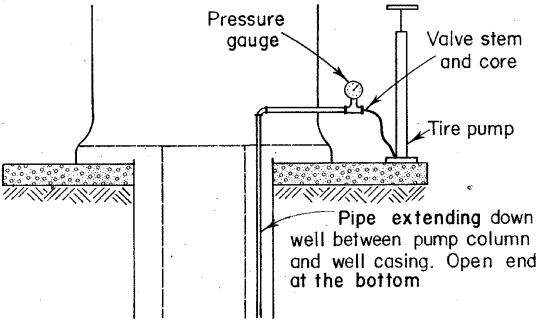
ACCESS PORT FOR MEASURING DEVICE



ACCESS PORT FOR MEASURING DEVICE



ACCESS PORT FOR MEASURING DEVICE



AIR LINE INSTALLATION

An air line installation is recommended where the water level lies at a considerable depth below land surface. The amount of air pressure that can be built up inside the air line will be equal to the depth of water standing above the bottom of the air line. The exact depth to the bottom of the air line is required to obtain an accurate measurement of the water level in the well. One pound per square inch pressure equals 2.31 feet of water.

SEALING OF DUG WELLS
(OAR 690-210-0400, 0410, 0420)

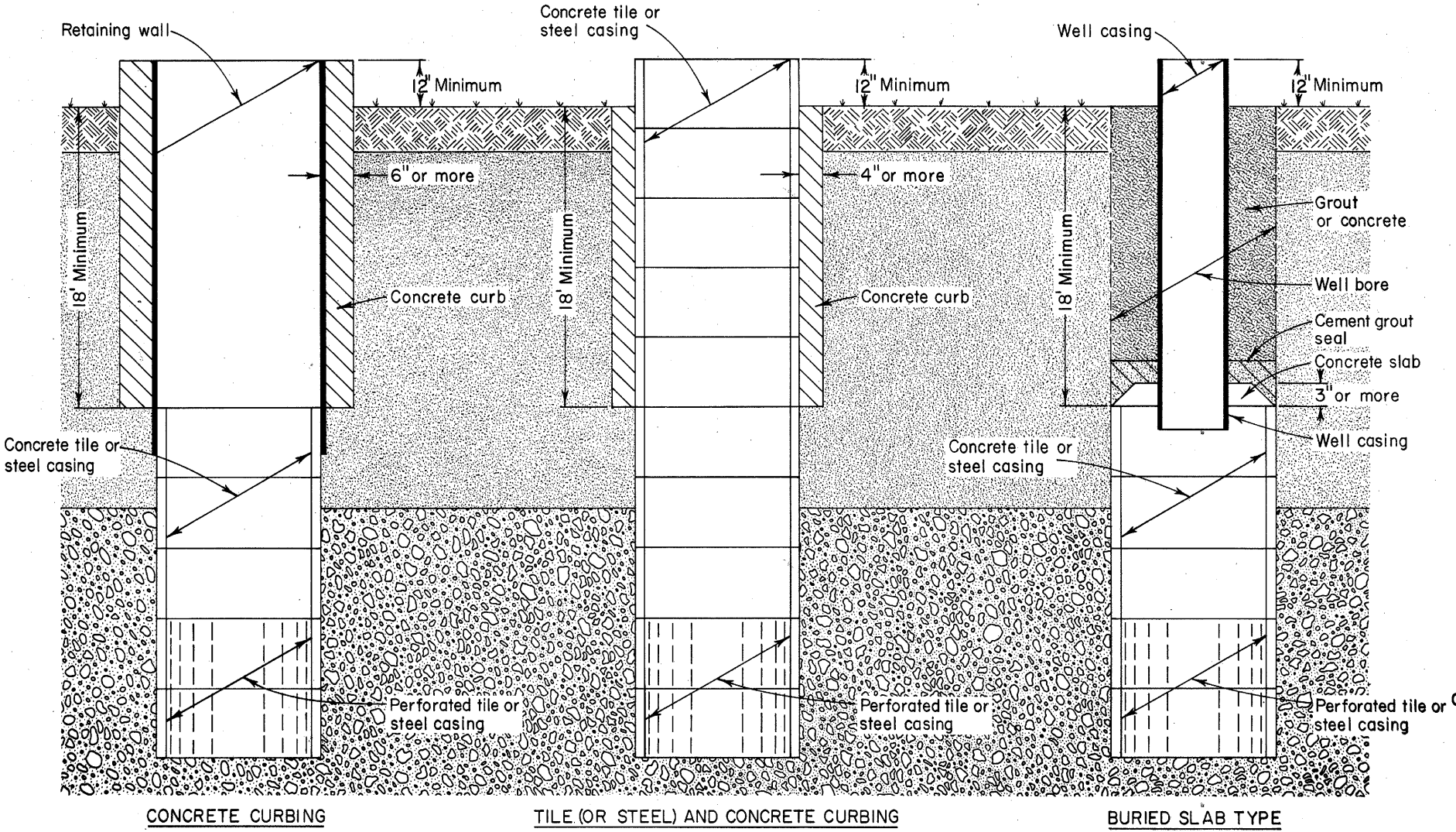


Figure 210-13

WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 215
MAINTENANCE, REPAIR AND DEEPENING OF WATER SUPPLY WELLS

690-215-0005
Prevention of Groundwater Contamination, Health Hazard, and Waste

(1) The landowner of the property on which the water supply well is constructed is ultimately responsible for the maintenance and use of the water supply well. All water supply wells should be disinfected following the installation of pumping equipment. Refer to OAR 690-210-0380, Appendix 2 for recommendations on well disinfection.

(2) The landowner shall maintain all water supply wells in a condition where they are not a health threat, a health hazard, a source of contamination or a source of waste of the ground water resource by allowing loss of artesian pressure or commingling of aquifers. A pitless adapter may be attached to the casing to transmit water from the well into the delivery pipeline. The pitless adapter shall be installed in such a manner as to prevent the contamination of the ground water resource. The landowner is responsible to assure that the space between the side of the well borehole and the well casing is sealed as required by OAR 690-215-0025.

(3) If, in the opinion of the Director, a water supply well is a health threat, a health hazard, a source of contamination, or a source of waste of the ground water resource, the Director may order discontinuance of, or impose conditions upon, the use of the water supply well. In addition, the Director may order that the well be repaired or permanently abandoned in accordance with OAR chapter 690, divisions 215 and 220 of the Standards for Construction and Maintenance of Water Supply Wells in the State of Oregon.

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 3-1983, f. & ef. 4-28-83; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-062-0005; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 21-1990, f. & cert. ef. 12-14-90; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 3-2008, f. 12-22-08, cert. ef. 1-2-09

690-215-0006
Well Alterations

(1) Well alterations as defined in OAR 690-200-0050(7) shall be performed by a licensed Water Supply Well Constructor, or a landowner with a Landowner's Well Construction Permit and bond.

(2) Water Supply Well Constructors or a permitted and bonded landowner shall record the following data, if available, on the Water Supply Well Report as required under OAR 690-205-0210 before completing alteration work on a well:

(a) Pre-alteration static water level and date taken.
(b) Pre-alteration casing diameter.
(c) Pre-alteration casing gauge.
(d) Pre-alteration well depth.
(e) Pre-alteration seal material.

(3) Well alteration work shall be completed in accordance with OAR 690-215. The Water Supply Well Constructor shall only be responsible for the alteration work they performed under OAR 690-215.

Stat. Auth.: ORS 536.090, 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 3-2008, f. 12-22-08, cert. ef. 1-2-09

690-215-0010
Maintenance of an Existing Well Following Construction of Replacement Well

Any time a new water supply well is constructed to replace an existing well which is a source of contamination, or is wasting the ground water resource by allowing loss of artesian pressure or commingling of aquifers, the existing well shall be repaired in compliance with these rules or abandoned in accordance with OAR 690-220-0030 through 690-220-0140.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 7-1988, f. & cert. ef. 6-29-88; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-215-0016
Maintaining Well Setback Requirements

Within the boundaries of their own property, property owners are responsible for maintaining the applicable minimum setback distances for any well on their property. Refer to OAR 690-210-0030 for current minimum setback distances.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 7-2001, f. & cert. ef. 11-15-01

690-215-0017
Down Well Continuous Water Treatment and Back-Siphon Prevention Devices

(1) If a chemical is used to treat well water, it shall not be allowed to come into contact with the inside of the well casing. Down well treatment of well water will only be allowed if a commercial water treatment system is used. Delivery pipes or tubes designed for use with the treatment chemicals shall be used to place the chemicals into the water in the well. This rule does not apply when disinfecting the well and the pumping equipment.

(2) In no event shall agricultural pesticides and fertilizers be allowed to enter a well.

(3) Back-siphon prevention equipment shall be installed on any irrigation system connected to a ground water source when fertilizers or any other chemicals are applied through the system. The landowner or other responsible parties shall be responsible for assuring that the back-siphon prevention equipment is installed and functions properly. (See Figure 215-1.) The landowner or other responsible parties shall inspect the device at least once per year, prior to the first use of the year, to ensure that the device is installed and functions properly.

(a) The irrigation system shall contain:

(A) An automatic low-pressure drain, which shall:

(i) Be installed between the irrigation pump and the irrigation line check valve at the lowest point of the horizontal water supply pipeline;

(ii) Be designed to drain all incidental leakage from the check valve out of the irrigation pipeline before that leakage enters the water supply;

(iii) Be at least 3/4 inch in diameter with a closing pressure of not less than 5 psi;

(iv) Use a corrosion-resistant tube, pipe, or similar conduit to discharge the solution at least 20 feet away and down-slope from the irrigation water source and any other water sources. At the discharge point there shall be an air gap between the discharge pipe and the discharged solution;

(v) Not have any valves located on the outlet side of the drain tube; and

(vi) Have a dam or collection reservoir to prevent the discharged solution from pooling and draining back toward the water source.

(B) An inspection port, which shall:

(i) Be located on top of the pipeline between the irrigation pump and the irrigation pipeline check valve, directly overhead of the low-pressure drain;

(ii) Have a minimum diameter opening of four inches from which the check valves and low-pressure drain shall be visible.

(C) An irrigation line check valve, which shall:

(i) Consist of at least a single check valve;

(ii) Be located in the pipeline between the irrigation pump and the point of chemical injection into the irrigation pipeline, and downstream from a vacuum relief valve and automatic low-pressure drain;

(iii) Be of heavy-duty construction with all materials resistant to corrosion or protected to resist corrosion;

(iv) Be spring-loaded and provide a watertight seal against reverse flow;
(v) Be labeled with the following information: manufacturer's name and model, working pressure in pounds per square inch (psi), maximum flow rate, and direction of flow;
(vi) Not consist of metal-to-metal seal surfaces; and
(vii) Be designed and rated for pressures expected to be encountered, including those caused by pumping, water hammers, back-pressure, or other sources. Installation shall be according to design and manufacturer's specifications and recommendations.

(D) An air/vacuum relief valve, which shall:
(i) Be located on top of the horizontal irrigation pipeline between the irrigation pump and the irrigation line check valve; and
(ii) Have a total (individually or combined) orifice size of at least 3/4-inch diameter for a 4-inch pipe, a 1-inch diameter for a 5- to 8-inch pipe, a 2-inch diameter for 9- to 18-inch pipe, and a 3-inch diameter for a 19-inch and greater pipe.

(E) A chemical injection line check valve, which shall:
(i) Be located between the chemical injection pump and the point of chemical injection into the irrigation line;
(ii) Be made of chemical-resistant material;
(iii) Prevent irrigation water under operating pressure from entering the chemical injection line; and
(iv) Prevent leakage from the chemical supply tank on system shutdown.

(F) A system interlock, which shall: mechanically or electrically connect the water supply pump and the chemical injection unit for the purpose of automatically shutting down the chemical injection unit in the event of water supply pump shutdown or failure.

(b) If modifications or changes in design, technology, irrigation practices, or other reasons warrant the use or placement of equipment in lieu of that specified herein, the Director may allow for such changes. Requests for modifications shall be in writing, detailing the existing system and uses, and shall include specifications on the proposed changes. The modification shall provide protection to the ground water resource that is equal to or greater than that provided by the equipment required in this regulation;

(c) These regulations are in addition to equipment requirements for pesticide application under the Federal Insecticide, Fungicide and Rodenticide Act, and are not intended to replace those regulations;

(d) Irrigation systems that are subject to OAR 690-215-0017(3) and are connected to a public water system, shall meet the cross-connection control requirements in OAR chapter 333;

(e) Whenever the Director deems it appropriate, the Department may investigate alleged violation of statutes, standards or rules governing back-siphon prevention devices to determine whether a violation has occurred. Violations of OAR 690-215-0017 may be administered under ORS 536.900(1)(c), 537.990(3), or OAR chapter 690, division 260, as appropriate to gain compliance.

Note: These rules were filed with the Office of the Secretary of State and took effect on 9/6/2016.
The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2)(a) when published by the Secretary of State.

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

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented:
Hist.: WRD 7-1988, f. & cert. ef. 6-29-88; WRD 1-1991, f. & cert. ef. 2-8-91; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-215-0020
Valves and Casing on Artesian Wells

Valves and casing on all artesian wells shall be maintained in a condition so that the flow of water can be completely stopped when the water is not being put to beneficial use. All casing, liner pipe, and casing seals shall be maintained in a condition that will prevent surface or subsurface leakage of ground water. Valves shall be closed when water is not being put to beneficial use. During periods of subfreezing temperatures, a valve may be partially opened to prevent damage due to freezing.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
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 690-062-0010 by WRD

690-215-0025
Sealing Pitless Adapter and Pitless Units

The sealing area around pitless adapter or pitless unit installations shall be replaced with unhydrated bentonite as required by OAR 690-210-0330 and shall be at least one and one-half inches thick around the casing and pitless device.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 3-2008, f. 12-22-08, cert. ef. 1-2-09

690-215-0030
Casing and Casing Extensions

(1) All well casing used to extend a well head above land surface or used in the alteration, repair or deepening of water supply wells shall meet the minimum standards in OAR 690-210.

(2) The annular space surrounding the well casing used to extend the well head shall be sealed as required by OAR 690-210 and shall be at least four inches greater than the nominal inside diameter of the permanent well casing.

NOTE: Prior to extending the casing on public, community, municipal, or public utility water supply wells, contact the Department of Human Services. Additional requirements may apply.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0221; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 3-2008, f. 12-22-08, cert. ef. 1-2-09

690-215-0035
Liner Pipe

All liner pipe used in the alteration, repair or deepening of water supply wells shall meet the minimum standards in OAR 690-210-0290.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 3-2008, f. 12-22-08, cert. ef. 1-2-09

690-215-0040
Casing and Sealing Wells after Disturbance

(1) If during the installation of casing, liner pipe, seals, packers, or during repair or deepening of a water supply well, the pre-existing casing is withdrawn, or moved as to compromise the annular seal, the well shall be cased and sealed in accordance with the rules set forth in OAR 690-210.

(2) If the annular seal is not compromised when cleaning out a water supply well or installing liner pipe, the water supply well shall not require re-casing or re-sealing.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0226; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 3-2008, f. 12-22-08, cert. ef. 1-2-09

690-215-0045
Deepening of Wells

(1) Only the following wells may be deepened without an approved special standard:
- (a) Wells with well reports that describe the original construction. The original well report must be:
  - (A) Referenced on the deepening well report; or
  - (B) Attached to the deepening well report.

(b) Wells that are recased and resealed to meet the current minimum well construction standards.

(2) The static water level shall be measured prior to and after deepening any well. Both readings shall be recorded on the well log.

(3) If the deepening of an existing well results in access to a new aquifer then prior to completion of deepening work all previous aquifers, including previous aquifers that have gone dry or are low-producing, shall be cased and sealed off using the methods described in OAR 690-210.

(4) The deepening of a water supply well shall not result in the commingling of aquifers.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 7-2001, f. & cert. ef. 11-15-01; WRD 3-2014, f. & cert. ef. 11-25-14

690-215-0050
Well Cover

All water supply wells shall be securely covered to prevent any foreign substance from entering the well, including any material, which might contaminate the ground water. The well cover shall meet the requirements of OAR 690-220-0005.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-2001, f. & cert. ef. 11-15-01

690-215-0055
Well Identification Label Maintenance

The well identification label shall not be removed from the wellhead and shall be maintained by the landowner in an accessible location and in a readable condition. See OAR 690-200-0048 for well identification label placement methods and instructions.

[ED. NOTE: Appendix referenced in this rule is available from the agency.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795
Stats. Implemented: ORS 536.090 & 537.505 - 537.795
Hist.: WRD 7-2001, f. & cert. ef. 11-15-01; WRD 8-2016, f. & cert. ef. 9-16-16

690-215-0060
Access Ports, Dedicated Measuring Tubes and Airlines

(1) All water supply wells, including wells that have been temporarily removed from service, temporarily abandoned due to a recess in construction, or temporarily abandoned before

commencing service, shall be properly covered and shall be equipped with a usable access port with a minimum diameter of 1/2-inch for the purpose of determining the water level in the well at any time.

(2) Dedicated measuring tubes are recommended to be installed on all water supply wells at the time of pump installation, pump repair, or pump replacement. Where required, dedicated measuring tubes shall be a minimum of 3/4-inch diameter schedule 40 PVC extending to the top of the pump. The 3/4-inch diameter dedicated measuring tube may be reduced in size to 1/2-inch where it goes through the watertight well cap, but shall not be reduced in size over the length of the pipe. Dedicated measuring tubes shall be vented above and below the well cap and shall be attached to the pump column at 10 foot intervals with 10 mil plastic tape. The lower five feet of the dedicated measuring tube shall be either 0.020 inch machine slotted well screen or the lower 20 feet of the dedicated measuring tube shall be extensively perforated with 1/8 inch holes. Dedicated measuring tubes shall be plugged or capped at the bottom (See Figure 200-5) and shall remain free from wire or other obstruction.

(3) An airline is not a substitute for a required dedicated measuring tube and, if installed, must enter the well in a location other than the access port.

(4) Access ports, dedicated measuring tubes or airlines on all water supply wells shall be capped and a minimum of twelve inches above finished ground surface or pumphouse floor. If the well has a pitless adaptor then the dedicated measuring tube shall terminate within six inches of the top of the well casing.

(5) Access ports, airlines and dedicated measuring tubes on all water supply wells shall be maintained by the landowner in a condition that will prevent contamination of the groundwater resource.

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

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 690-062-0015; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 2-2008, f. 6-18-08, cert. ef. 7-1-08; WRD 8-2016, f. & cert. ef. 9-16-16

690-215-0070
Pressure Gauge

The pressure gauge and petcock valve required by OAR 690-210-0155 shall be maintained so that the artesian pressure can be accurately determined at any time. (See Figure 210-7.)

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

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

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 690-062-0020; WRD 7-2001, f. & cert. ef. 11-15-01

690-215-0080
Flowmeters and Dedicated Measuring Tubes

The Director may require the landowner to install totalizing flowmeters or dedicated measuring tubes on any water supply well, either as a condition of a water right permit or at a later date as circumstances may warrant. The landowner may be required to install totalizing flowmeters or dedicated measuring tubes on existing permitted wells and on wells, which are exempted by ORS 537.545.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 2-2008, f. 6-18-08, cert. ef. 7-1-08

690-215-0090
Conversion to an Artesian Well

If a water supply well becomes artesian upon deepening, the well shall be cased, sealed and completed in accordance with OAR 690-210-0155.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0236; WRD 7-2001, f. & cert. ef. 11-15-01

690-215-0100
Drilling in a Dug Well

In no case shall a dug well be deepened by drilling methods.

Stat. Auth.: ORS 183, 536, 537 & 540
Stats. Implemented:
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-061-0241

690-215-0200
Dedicated Measuring Tube

A dedicated measuring tube as described in 690-215-0060 shall be installed in any water supply well at the time of pump installation, pump repair or pump replacement in the following areas (See Figures 200-4, 200-5**,** 200-7 and 200-8):

(1) Petes Mountain Area of Clackamas County (See OAR 690-200-0028(2));

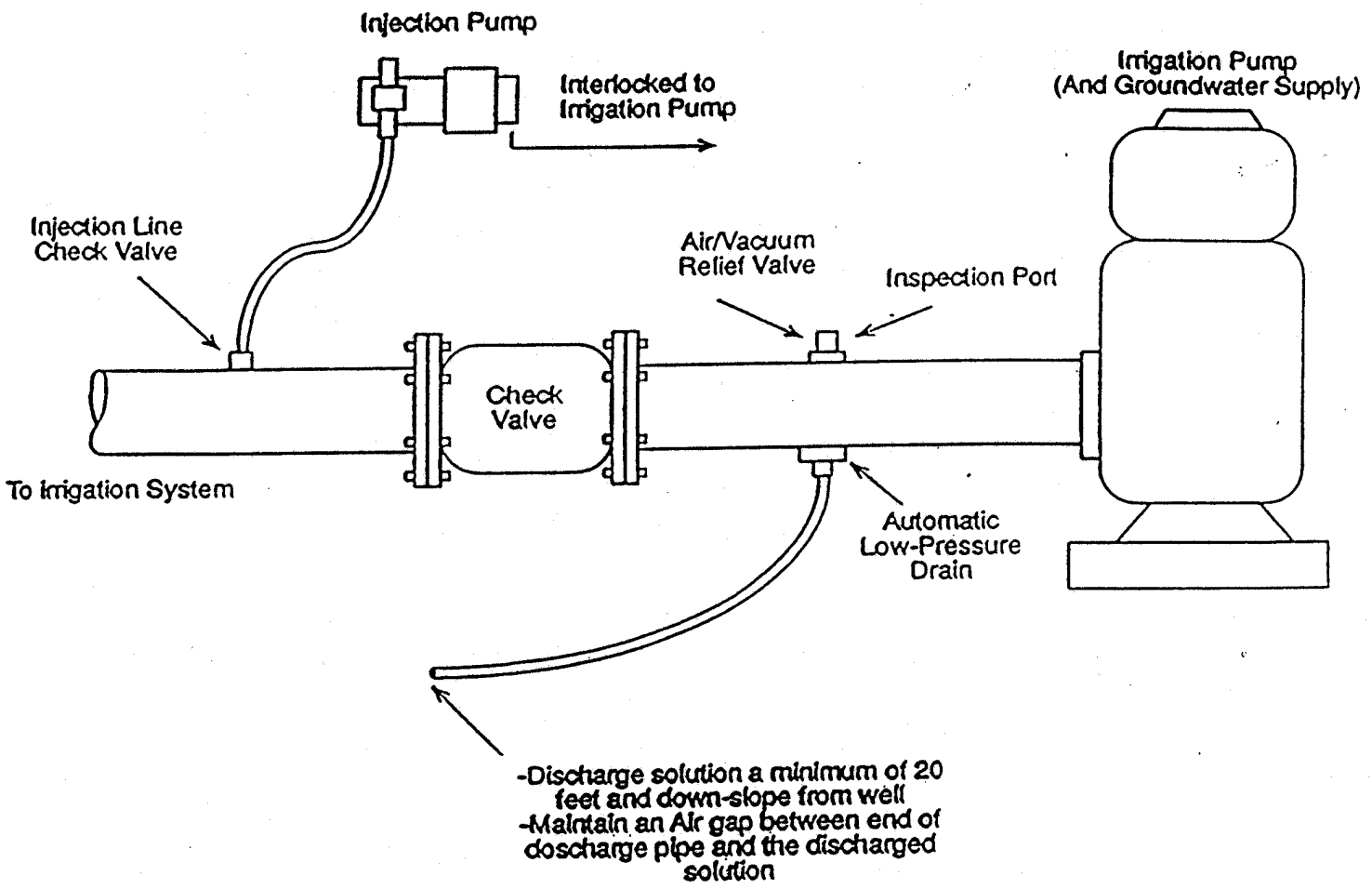
(2) Eola Hills Ground Water Limited Area of Polk and Yamhill Counties (See OAR 690-200-0028(3);

(3) "Mosier Area" Special Area Standards area of Wasco County (See OAR 690-200-0028(4)).

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD May-2008 cert. & f. ef. 7-1-08; WRD June 2015 cert. & f. ef. 7-1-15

Note: These rules were filed with the Office of the Secretary of State and took effect on 9/6/2016. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2)(a) when published by the Secretary of State.

Figure 215-1



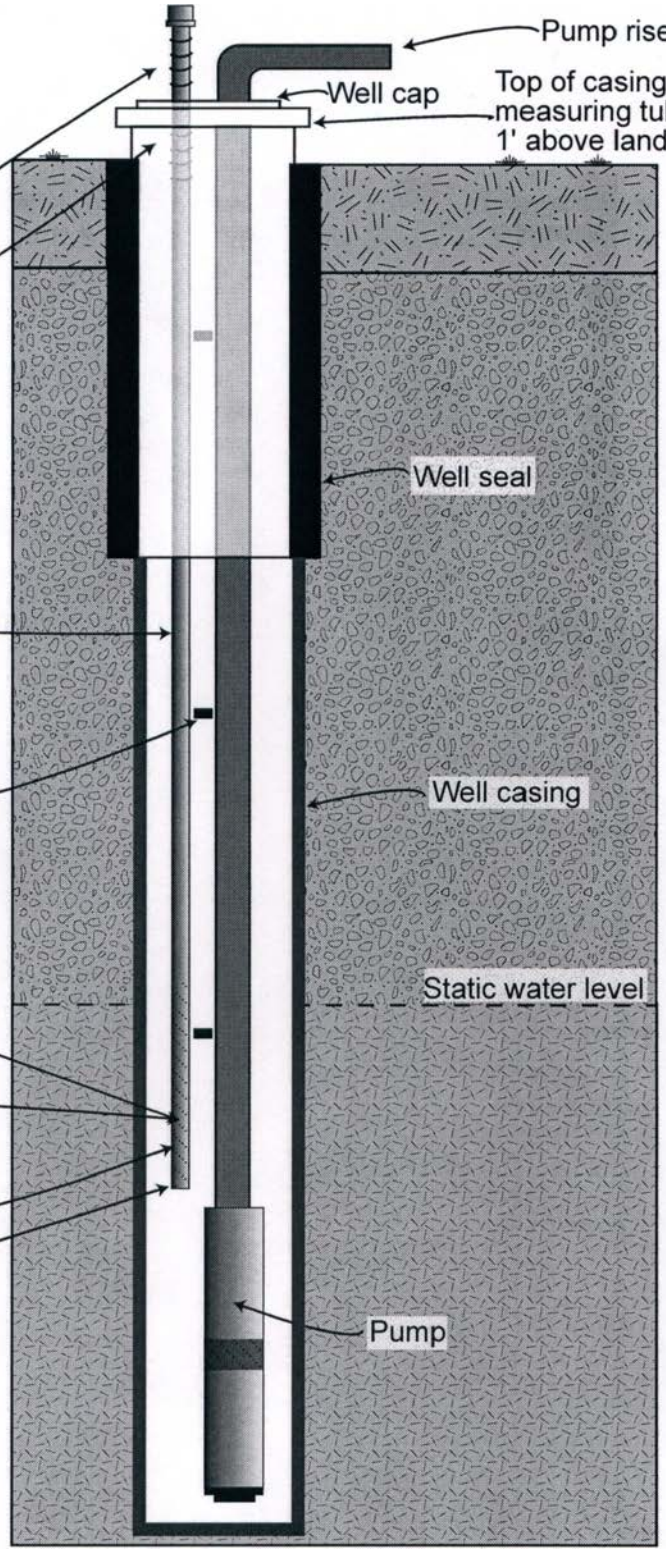
Backflow prevention device using check valve with vacuum relief and low pressure drain.

Figure 200-5

Measuring Tube Diagram and Specifications

Minimum Specifications for Measuring Tube

- Vented above and below well cap.
- If well has a pitless adaptor, the measuring tube terminates within 6 inches of the top of well casing.
- Measuring tube nominal 3/4 inch diameter schedule 40 PVC.
- Attached to pump column at 10 foot intervals with 10 mil plastic tape.
- Perforation / Screen
  - Lower 5 feet 0.020 inch machine-slotted well screen or
  - Lower 20 feet extensively perforated with 1/8 inch holes.
- Extends to top of pump.
- Plug or cap.



This diagram details the minimum standards for a dedicated measuring tube. A measuring tube may be constructed in a manner that exceeds these standards without prior Department approval. The dedicated measuring tube shall not be reduced in size over the length of the pipe and shall remain free from wires or any other obstruction.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690
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 690-205-0210, 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.

Note: These rules were filed with the Office of the Secretary of State and took effect on July 1, 2015. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2) (a) when published by the Secretary of State.

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

(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 11-2008, f. & cert. ef. 1-2-09

Note: These rules were filed with the Office of the Secretary of State and took effect on July 1, 2015. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2) (a) when published by the Secretary of State.

690-220-0050
Abandonment of Uncased Wells

(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

690-220-0070
Abandonment of Artesian Wells

In addition to OAR 690-220-0040 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

Note: These rules were filed with the Office of the Secretary of State and took effect on July 1, 2015. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2) (a) when published by the Secretary of State.

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 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.

Note: These rules were filed with the Office of the Secretary of State and took effect on July 1, 2015. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2) (a) when published by the Secretary of State.

(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.

(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.

Note: These rules were filed with the Office of the Secretary of State and took effect on July 1, 2015. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2) (a) when published by the Secretary of State.

(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.

(A) Prior Department approval is required before placement.

(B) 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.

Note: These rules were filed with the Office of the Secretary of State and took effect on July 1, 2015. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360 (2) (a) when published by the Secretary of State.

(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, 536, 537 & 540
Stats. Implemented: ORS 183, 536, 537 & 540
Hist.: WRD 11-2008, f. & cert. ef. 1-2-09; WRD 6-2015, f. & cert. ef. 7-1-2015

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

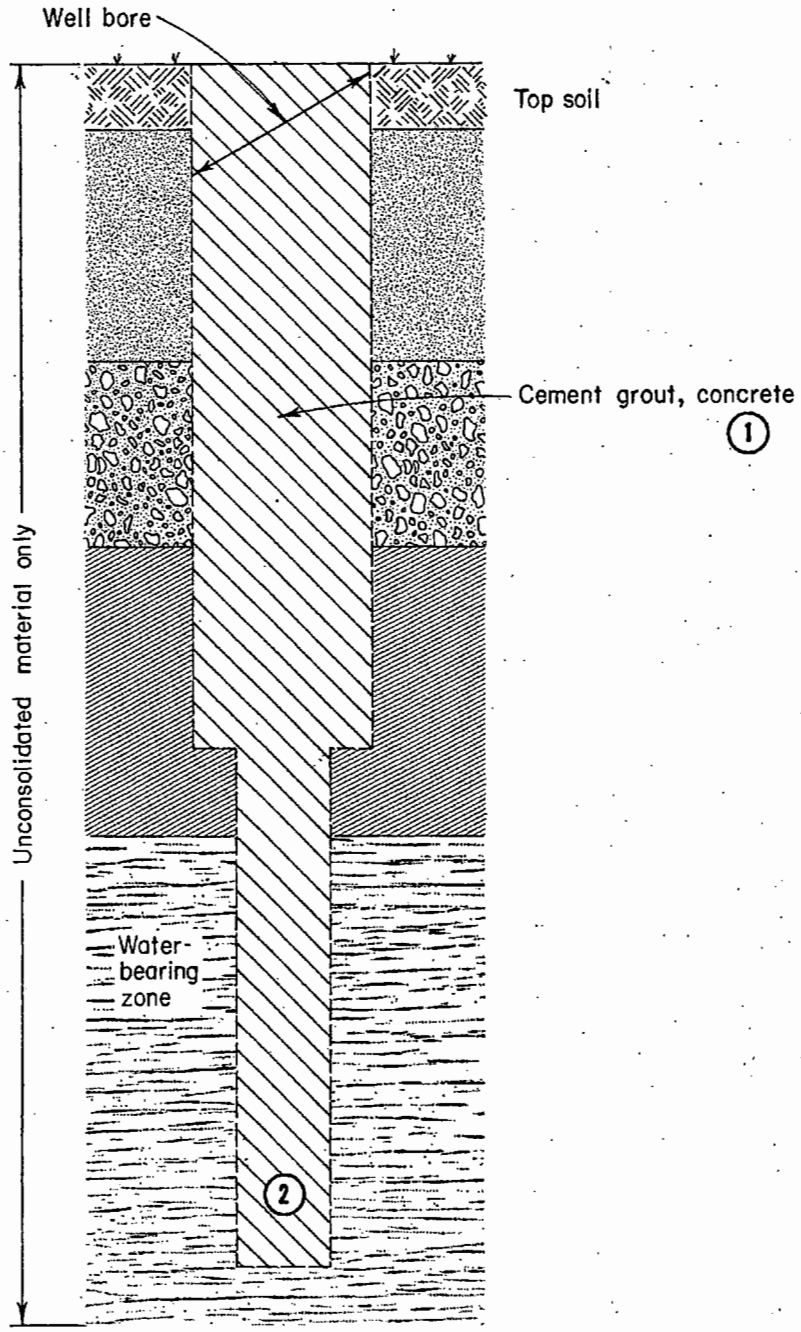
690-220-0140
Method of Placement of Concrete or Cement Grout

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

Figure 220-1

ABANDONMENT OF UNCASED WELLS IN UNCONSOLIDATED FORMATIONS (OAR 690-220-0040)



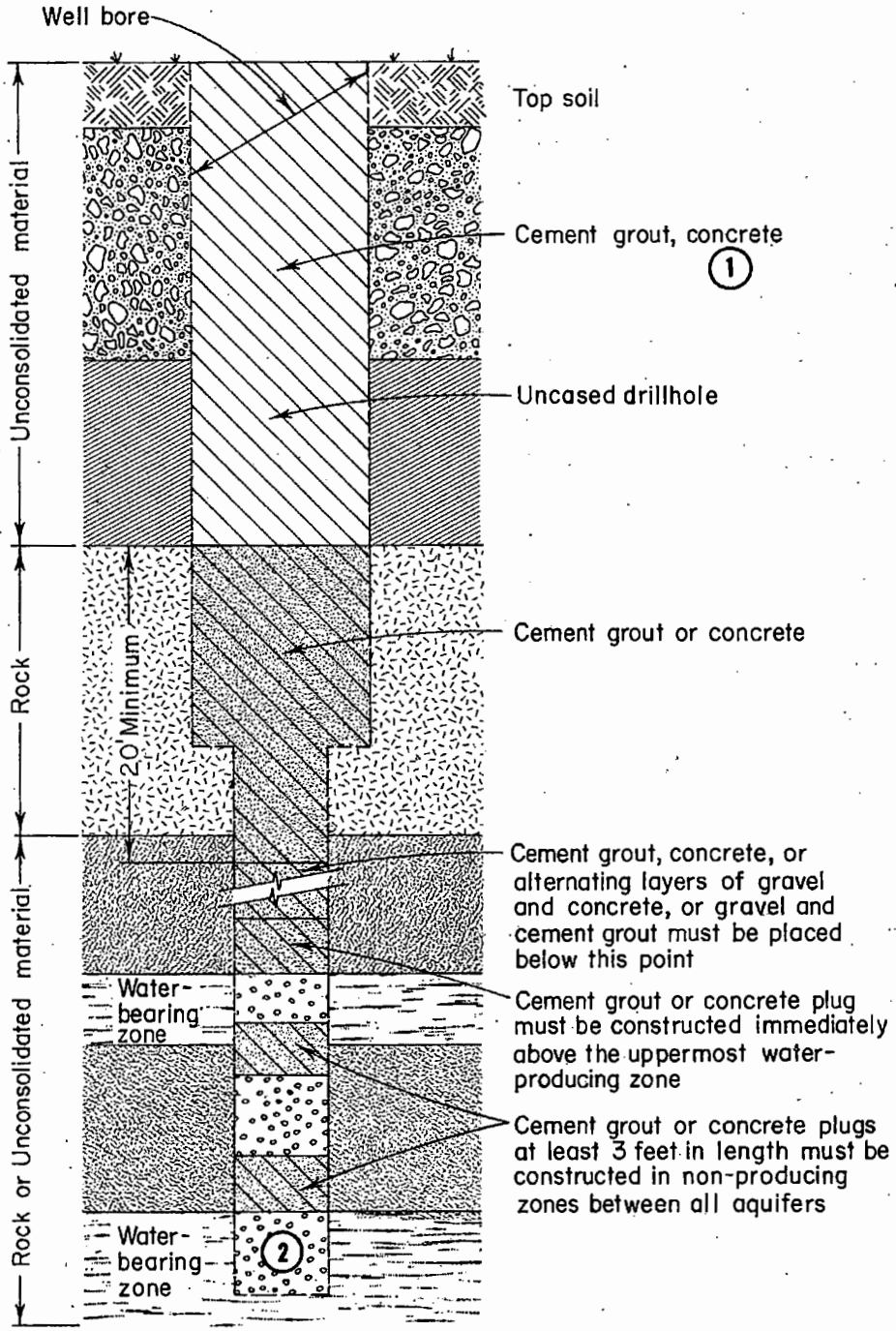
1. In all wells to be abandoned, cement grout and concrete must be placed by grout pipe, tremie, or dump bailer.

2. In all wells to be abandoned, sealing material must be introduced at the bottom of the well and placed progressively upward.

Figure 220-2

ABANDONMENT OF UNCASED WELLS IN CONSOLIDATED FORMATIONS

(OAR 690-220-0050)

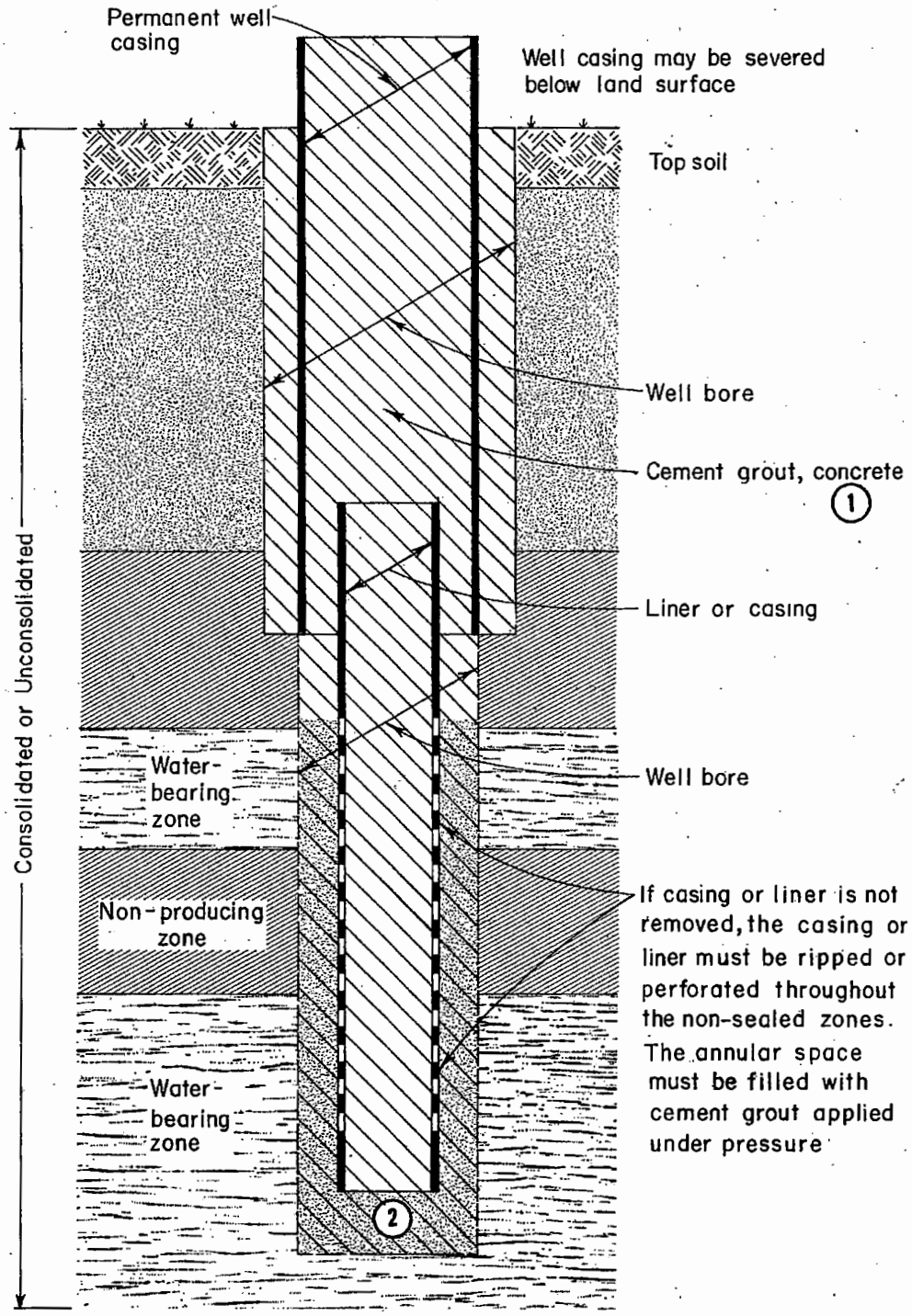


1. In all wells to be abandoned, cement grout and concrete must be placed by grout pipe, tremie, or dump bailer.

2. In all wells to be abandoned, sealing material must be introduced at the bottom of the well and placed progressively upward.

Figure 220-3

ABANDONMENT OF CASED WELLS
(OAR 690-220-0060)



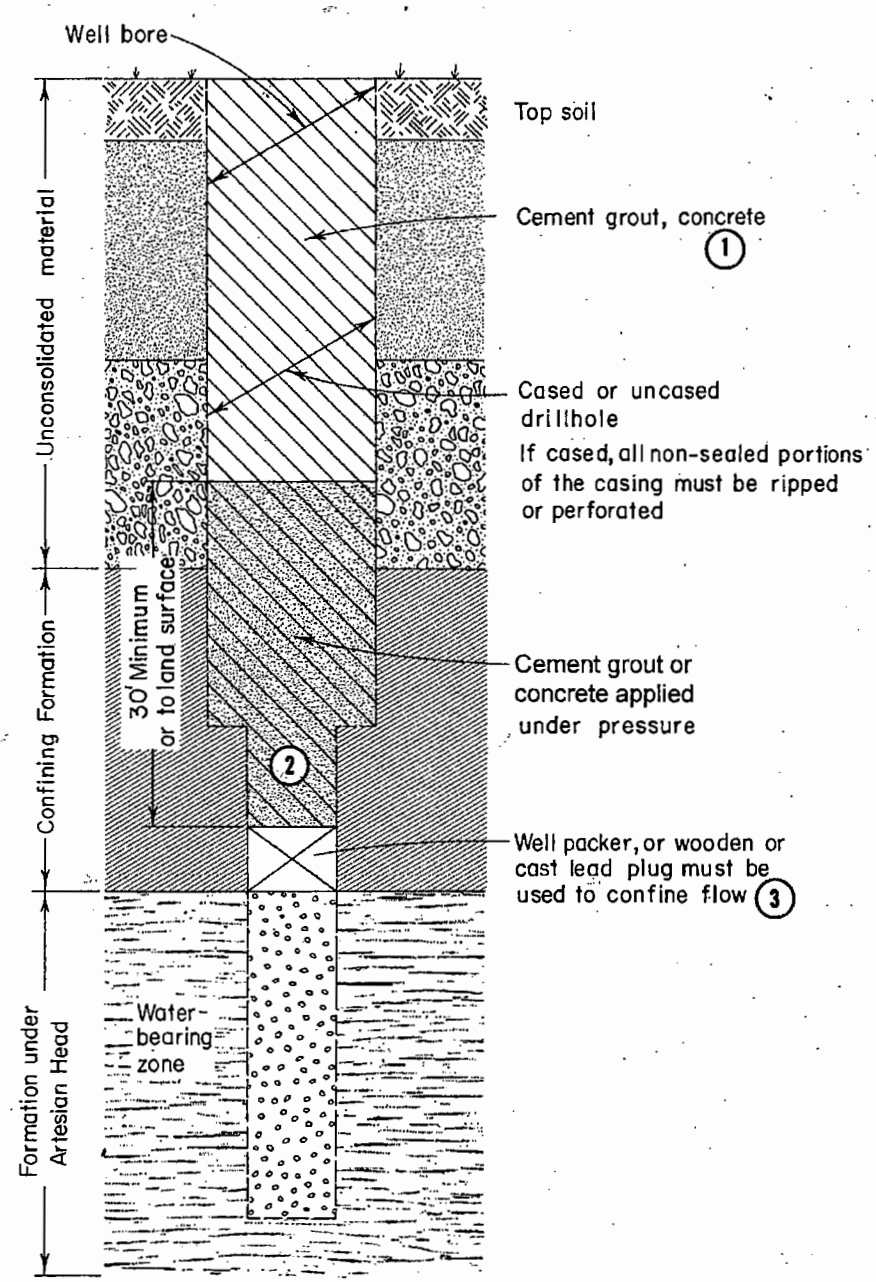
1. In all wells to be abandoned, cement grout and concrete must be placed by grout pipe, tremie or dump bailer.

2. In all wells to be abandoned, sealing material must be introduced at the bottom of the well and placed progressively upward.

Figure 220-4

ABANDONMENT OF ARTESIAN WELLS

(OAR 690-220-0070)



1. In all wells to be abandoned, cement grout and concrete must be placed by grout pipe, tremie or dump bailer.
2. In all wells to be abandoned, sealing material must be introduced at the bottom of the well and placed progressively upward.
3. Preshaped or precast plugs should be several times longer than the diameter of the well to prevent tilting.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 225
WATER WELL CONSTRUCTION STANDARDS
ENFORCEMENT

690-225-0020
Investigation of Alleged Violations

(1) The Water Resources Director, upon the Director's own initiative, or upon complaint alleging violation of statutes, standards or rules governing construction, alteration, or abandonment of wells may cause an investigation to determine whether a violation has occurred. If the investigation indicates that a violation has occurred, the Director shall notify the persons believed responsible for the violation including but not limited to:

(a) Any Water Supply Well Constructor involved; or

(b) The landowner, if the violation involves construction, alteration, operation, or abandonment of a well.

(2) Enforcement and civil penalty assessment for other than well constructors is described in OAR 690-260.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 5-2006, f. & cert. ef. 6-20-06

690-225-0030
Enforcement Actions

(1) If, after notice and opportunity for hearing under ORS 183.310 to 183.550 the Director determines that one or more violations have occurred, the Director may impose one or more of the following:

(a) Provide a specified time for remedy;

(b) Assess a civil penalty in accordance with the schedule of civil penalties in OAR 690-225-0110;

(c) Suspend, revoke, or refuse to renew the licenses when one or more persons responsible for the violation hold a Water Supply Well Constructor's License;

(d) Require that a person whose license has been refused renewal pass the Water Supply Well Constructor's License examination before a new license is issued;

(e) Impose any reasonable conditions on the Water Supply Well Constructor's License to insure correction of the violation and future compliance with the law. These

conditions may include but are not limited to:

(A) Fulfilling any outstanding obligations which are the result of administrative action before the constructor can offer any services or construct, alter or abandon any well;

(B) Requiring additional advance notice to be given to the Department of construction, alteration or abandonment of any well;

(C) Requiring a seal placement notice be given to the Department 24 hours in advance of placing the seal; or

(D) Any other conditions the Director feels are appropriate.

(f) Order the landowner to repair or meet other conditions on use of the well, or order discontinuance of use and proper abandonment pursuant to ORS 537.775;

(g) Make demand on the Water Well Constructor's Bond or on the Landowner's Water Well Bond. This may occur only if the Director has given the notice required in OAR 690-225-0020 to the persons responsible for the violation within three years after the date the well report is filed with the Department. If no well report has been filed, the three year limitation shall not apply until such time as a well report is filed;

(h) Take any other action authorized by law.

(2) An order may specify a schedule of escalating or cumulative sanctions to be assessed on specified dates until satisfactory correction of the violation has been completed.

(3) Any Water Supply Well Constructor whose license is suspended or revoked shall not contract for well construction services or operate well drilling machines in the State of Oregon during the suspension or revocation period.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 5-2006, f. & cert. ef. 6-20-06

690-225-0040
Multiple Violations and Consolidation of Proceedings

In cases of multiple or continuing violations, each occurrence of substantially the same activity and each days continuance of a violation after the responsible party has been notified is a separate and distinct violation. Administrative enforcement proceedings for multiple violations may be consolidated into a single proceeding.

Stat. Auth.: ORS Ch. 183, 536, 537 & 540
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 9-2001, f. & cert. ef. 11-15-01

690-225-0050
Factors Affecting Selection of Type and Degree of Enforcement

In selecting the appropriate type and degree of enforcement, the Director may consider the

following factors:

(1) Whether the constructor's file demonstrates a pattern of prior similar violations;

(2) Whether the respondent has cooperated in attempting correction of any violation in a timely fashion;

(3) The gravity and magnitude of the violation, including whether there is an immediate or long-term threat to human health or the ground water resource;

(4) Whether the damage to the ground water resource is reversible;

(5) Whether the violation in the instances cited was repeated or continuous;

(6) Whether a cause of the violation was an unavoidable accident;

(7) The opportunity and degree of difficulty to correct the violation;

(8) The cost to the Department, except for travel costs and the initial field investigation, in attempting to gain voluntary compliance of the cited violation. The costs may be considered until the Department receives respondent's answer to the written notice and opportunity for hearing; and

(9) Any other relevant factor.

Stat. Auth.: ORS Ch. 183, 536, 537 & 540
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 9-2001, f. & cert. ef. 11-15-01

690-225-0060
Change in Enforcement Status

(1) In the interest of achieving compliance, the Director at any time may reevaluate the status of the violations and take appropriate action, including reduction of the enforcement level or remission of all or part of any civil penalties assessed.

(2) The Director may terminate proceedings against a Water Supply Well Constructor if the constructor provides acceptable evidence that:

(a) The landowner does not permit the constructor to be present at any inspection made by the Director; or

(b) That the constructor is capable of complying with recommendations made by the Director, but the landowner does not permit the constructor to comply. In such cases, the landowner is responsible for bringing the well into compliance pursuant to ORS 537.535, and if the landowner was not a party to the original enforcement proceeding the Director may initiate a proceeding to ensure that the landowner does so.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86; WRD 5-2006, f. & cert. ef. 6-20-06

690-225-0100
Assessment of Civil Penalties

Under OAR 690-225-0030(1) the Director may at any time select the most appropriate enforcement tool, including assessment of civil penalties, to gain compliance. However, the Director shall not impose a civil penalty if compliance has been achieved in another manner prior to final decision in the proceeding.

Stat. Auth.: ORS Ch. 183, 536, 537 & 540
Hist.: WRD 13-1986, f. 10-7-86, ef. 11-1-86

690-225-0110
Schedule of Civil Penalties

(1) The amount of civil penalty shall be determined consistent with the following schedule:

(a) Not less than $25 nor more than $250 for each occurrence defined in these rules as a minor violation;

(b) Not less than $50 nor more than $1,000 for each occurrence defined in these rules as a major violation;

(c) First occurrence, in a calendar year, of a missing or late start card fee shall be $150;

(d) Second occurrence, in a calendar year, of a missing or late start card fee shall be $250;

(e) Third, and each subsequent, occurrence, in a calendar year, of a missing or late start card fee shall be $250 and may include suspension of the Water Supply Well Constructor's license, and any other action authorized by law.

(2) For purposes of assessing a civil penalty, the start card fee referred to in subsections (1)(c), (d), and (e) of this rule shall not be considered late if it is received in the Salem office of the Water Resources Department within five days of the receipt of the start card, provided the start card was submitted in a timely manner as described in OAR 690-205-0200.

(3) Table 1 lists minor violations of well construction standards. All other violations are declared to be major.

[ED. NOTE: The Table referenced in this rule is not printed in the OAR Compilation. Copies 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 13-1986, f. 10-7-86, ef. 11-1-86; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 7-1989(Temp), f. & cert. ef. 9-29-89; WRD 10-1989, f. & cert. ef. 11-20-89; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 5-2006, f. & cert. ef. 6-20-06

TABLE 225-1

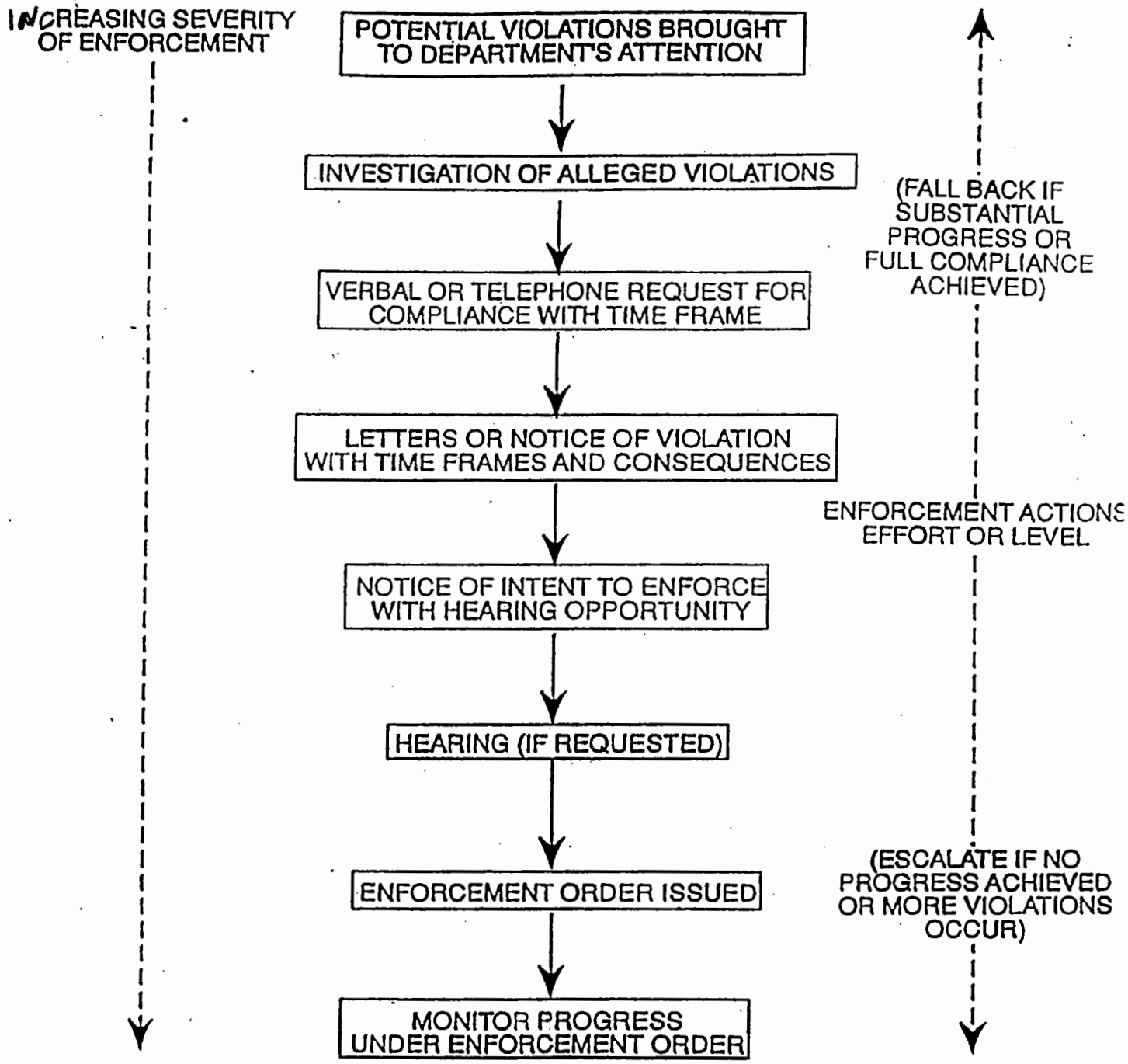
MINOR WELL CONSTRUCTION VIOLATIONS

Oregon Statute Reference	Value Assignment	Title
ORS 537.762	Minor	REPORT OF COMMENCEMENT OF CONSTRUCTION
ORS 537.765	Minor	WELL REPORT
ORS 537.789	Minor	WELL IDENTIFICATION NUMBER

Administrative Rule Reference	Value Assignment	Title
690-200-0048	Minor	WELL IDENTIFICATION LABEL
690-205-0185	Minor	WATER SUPPLY WELL DRILLING MACHINES
690-205-0200	Minor	WATER SUPPLY WELL CONSTRUCTION NOTICE REQUIRED (START CARD)
690-205-0210	Minor	WELL REPORT REQUIRED (WATER SUPPLY WELL LOG)
690-210-0270	Minor	PITLESS WELL ADAPTERS AND UNITS
690-210-0280	Minor	ACCESS PORTS AND AIRLINES
690-210-0290	Minor	LINER PIPE
690-210-0370	Minor	WELL TEST
690-215-0055	Minor	WELL IDENTIFICATION LABEL MAINTENANCE
690-230-0050	Minor	DESCRIPTION OF PROPOSED WELL USE (START CARD)
690-230-0060	Minor	IDENTIFICATION OF INTENDED WELL USE (WELL LOG)
690-230-0080	Minor	PUMP TESTING OF LOW-TEMPERATURE GEOTHERMAL INJECTION WELLS WITH AN ANTICIPATED INJECTION RATE OF LESS THAN 15,000 GALLONS PER DAY
690-230-0090	Minor	WATER TEMPERATURE MEASUREMENT

EXAMPLE OF WELL ENFORCEMENT PROCESS (690-225)

Table 225-2



It is desireable to achieve compliance at the lowest possible level of enforcement. Escalation of enforcement can be expected if compliance does not result at the next lower level. Reduction of enforcement effort can be expected if substantial progress towards compliance is achieved

November 15, 2001

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 230
STANDARDS AND PROCEDURES FOR LOW-TEMPERATURE GEOTHERMAL PRODUCTION AND INJECTION WELLS AND EFFLUENT DISPOSAL SYSTEMS

690-230-0005
Policy and Purpose

(1) All low-temperature geo-thermal fluids are part of the groundwater resources of the State of Oregon and shall be administered by the Water Resources Commission (Commission) under the provisions of ORS 537.010 to 537.796. The Commission recognizes that these fluids are developed primarily because of their thermal characteristics and that special management is necessary. Reservoir assessment of low-temperature geothermal fluids shall be conducted by the Commission in the same manner as groundwater investigations outlined in ORS 537.665 and ORS 537.685.

(2) In areas where substantial thermal alteration exists, the Commission may declare a critical groundwater area, or may otherwise control use of groundwater, or order the discontinued use, repair or permanent abandonment of a well(s) causing substantial thermal alteration, in order to protect the thermal characteristics of the groundwater resource. The Commission may also regulate appropriations to limit thermal interference between wells. Low-temperature geothermal appropriations with a bottom hole temperature less than 60 degrees Fahrenheit (F) shall not be protected from thermal interference caused by groundwater appropriations for other purposes.

(3) The purpose of the following rules is to provide standards and procedures for the development, use and management of low-temperature geothermal fluids, while insuring proper management of all groundwater resources so maximum beneficial use of the resource will be most effectively attained.

(4) These rules supplement OAR 690-200-0005 to 690-225-0110.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 5-1986, f. 5-16-86, ef. 5-19-86,; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0005; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0020
Definitions

(1) "Bottom hole temperature": means the maximum temperature measured in the well or borehole. It is normally attained directly adjacent to the producing zone, commonly at or near the bottom of the borehole, and will in all cases be greater than or equal to the temperature of fluid

Note: These rules were filed with the Office of the Secretary of State and took effect on November 15, 2001. The rules are subject to non-substantive modifications such as renumbering and correction of typographical errors pursuant to ORS 183.360(2)(a) when published by the Secretary of State

produced from the borehole.

(2) "Low-temperature geothermal effluent": means the outflow, discharge or waste fluid, with its associated dissolved or suspended constituents (being original or introduced), that is produced by a low-temperature geothermal well and its utilization system.

(3) "Low-temperature geothermal fluid": means any groundwater used for its thermal characteristics that is encountered in a well with a bottom hole temperature of less than 250 degrees F, or any other fluid that is circulated within a well having a bottom hole temperature of less than 250 degrees F and used for its thermal characteristics.

(4) "Low-temperature geothermal injection well": means any well as defined under ORS 537.515(9) that is constructed or used for returning low-temperature geothermal effluent to a groundwater reservoir.

(5) "Low-temperature geothermal production well": means any well as defined under ORS 537.515(9) with a bottom hole temperature of less than 250 degrees F that is constructed or used for the thermal characteristics of the fluid contained within.

(6) "Nonstandard low-temperature geothermal effluent disposal system": means any low-temperature geothermal effluent disposal system in which one or more of the following conditions are met:

(a) Any portion of the effluent is disposed of in a manner considered non-beneficial by the Director. This includes, but is not limited to, disposal via storm sewer, drainage hole or direct discharge to land surface or a surface water body;

(b) The effluent contains contaminants, other than heat, that have been added to the low-temperature geothermal fluid;

(c) The effluent is injected into a groundwater reservoir that is not considered suitable by the Director. Factors which may render a groundwater reservoir unsuitable include, but are not limited to, chemical or physical incompatibility of the fluids involved or adverse hydraulic characteristics of the receiving reservoir;

(d) There are other existing or potential site specific problems or conditions, that require the nonstandard designation of effluent disposal. Examples include, but are not limited to, instability of near-surface earth materials, undue alteration of thermal characteristics of groundwater, unreasonable head changes or leakage of effluent back to the surface.

(7) "Secondary use": means the consumption of low-temperature geothermal effluent for beneficial use including, but not limited to, domestic, irrigation, stock watering, commercial and industrial uses.

(8) "Standard low-temperature geothermal effluent disposal system": means any low-temperature geothermal effluent disposal system in which one or more of the following conditions are met:

(a) No contaminants other than heat, have been added to the low-temperature geothermal fluid and the effluent is put to a secondary use;

(b) No contaminants, other than heat, have been added to the low-temperature geothermal fluid and the effluent is returned to the producing groundwater reservoir or other suitable groundwater reservoir as determined by the Director. In addition there are no other existing or potential problems or special conditions as determined by the Director, that include, but are not limited to, those factors, problems and conditions listed in subsections (6)(c) and (d)

of this rule.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 5-1986, f. 5-16-86, ef. 5-19-86; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0010; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 18-1990, f. & cert. ef. 12-14-90

Well Construction Standards

690-230-0030
Construction of Low-Temperature Geothermal Production and Injection Wells

(1) Low-temperature geothermal production and injection wells shall be constructed in conformance with applicable rules (OAR 690-200-0005 to 690-225-0110) with specific additions and modifications as described in OAR 690-230-0005 to 690-230-0140.

(2) Low-temperature geothermal production and low-temperature geothermal injection wells shall be constructed in a manner that protects groundwater from contamination, waste and loss of artesian pressure, and substantial thermal alteration.

(3) If utilization of the well causes heating or cooling of the casing resulting in thermal expansion or contraction of the casing to the point that adherence to the minimum well construction standards will not prevent or eliminate groundwater contamination, groundwater waste ,or loss of artesian pressure, or substantial thermal alteration, then the licensed well constructor shall submit a written request to the Director to use alternate construction methods and/or materials to prevent groundwater contamination, groundwater waste, loss of artesian pressure, and substantial thermal alteration. Written approval from the Director must be obtained prior to completion of the well.

(4) A well constructor or owner of a low-temperature geothermal production or injection well may submit well construction plans to the Department for assistance and review of construction details.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0015; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0040
Location of Low-Temperature Geothermal Injection Wells Not Exceeding 15,000 Gallons Per Day

(1) No low-temperature geothermal injection well with an anticipated injection rate of less than 15,000 gallons per day shall be located within 75 feet of any existing low-temperature geothermal production well utilizing the same groundwater reservoir without authorization from the Director, unless both the production and injection wells are owned or used by the same person.

(2) A request to construct a low-temperature geothermal injection well within 75 feet of a low-temperature geothermal production well shall be made in writing to the Director. The request shall list the names and addresses of the property owners, street addresses of the wells,

and shall state the reason(s) for locating the injection well closer than 75 feet to the production well. The Director may approve construction of an injection well closer than 75 feet to a production well only if the Director determines that the hydrologic and thermal conditions described in OAR 690-230-0110(1) justify the closer spacing.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0020; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0045
Location of Low-Temperature Geothermal Injection Wells Exceeding 15,000 Gallons Per Day
The owner of any low-temperature geothermal injection well having an anticipated injection rate of greater than 15,000 gallons per day is required to have a separation distance between the low-temperature geothermal injection and production wells that is adequate to protect the production wells from substantial thermal interference. The Director shall make a decision on the proposed separation distance based on information supplied by the owner as per OAR 690-230-0115.

Stat. Auth.: ORS 537
Stats. Implemented: ORS 537
Hist.: WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0050
Description of Proposed Well Use (Start Card)
For any low-temperature geo-thermal production or injection well, the report required under ORS 537.762 prior to commencing well construction shall identify the intended use of the well, the owner's name and the owner's mailing address.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0025; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0060
Identification of Intended Well Use (Well Log)
Any low-temperature geothermal production or injection well shall be clearly identified as such on the water well report filed with the Water Resources Department under ORS 537.765.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1989, f. & ef. 12-14-82; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0025; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0070
Well-Head Protection Equipment
Adequate well-head equipment to insure public safety and the protection of the groundwater resource shall be immediately installed on any low-temperature geothermal production well or low-temperature geothermal injection well when the temperature of the fluid being withdrawn from, being pumped from, or flowing from the well bore exceeds 65 degrees C (150 degrees F). A variance from the requirement for well-head protection equipment may be granted if a written request demonstrates that the equipment is not necessary to safely complete the well.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0035; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0075
Disposal of Low-Temperature Geothermal Fluids Produced During Drilling and Testing
Low-temperature geothermal fluids produced during drilling or testing of a low-temperature geothermal production or injection well shall be disposed of in a manner that minimizes hazards. For additional requirements on the disposal of low-temperature geothermal fluids produced during well drilling or testing, contact the Oregon Department of Environmental Quality.

Stat. Auth.: ORS 537
Stats. Implemented: ORS 537
Hist.: WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0080
Pump Testing of Low-Temperature Geothermal Injection Wells With an Anticipated Injection Rate of Less than 15,000 Gallons Per Day

(1) All low-temperature geothermal injection wells with an anticipated injection rate of less than 15,000 gallons per day shall be pump tested for a period of at least one hour. Test results must be recorded by the well constructor on the water well report. This minimum test shall be conducted as follows:

(a) Prior to testing, the static water level in the well shall be measured and recorded;

(b) The water shall be pumped into or from the well at a measured and steady rate. The pumping or withdrawal rate shall approximate the maximum anticipated injection rate;

(c) For tests that withdraw water from the well, only bailing or pumping the well is acceptable; and

(d) At a minimum the water level in the well shall be measured and recorded both at the end of pumping and after one hour of recovery.

(2) The Director may require the well owner to provide a more detailed test, separate from the water well report, that could include, but is not limited to, increased frequency of water level measurement, increased test duration and increased monitoring of observation wells. Such modifications will be required when possible impacts resulting from the development include, but are not limited to, thermal or hydrologic interference with existing water rights, water quality

degradation or physical or mechanical failure of the well structure.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 5-1986, f. 5-16-86, ef. 5-19-86; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0040; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0085
Pump Testing of Low-Temperature Geothermal Injection Wells With an Anticipated Injection Rate Exceeding 15,000 Gallons Per Day

(1) Low-temperature geothermal injection wells (other than flowing artesian wells) with an anticipated injection rate of greater than 15,000 gallons per day, shall be pump tested for a period for at least four hours. The pump test shall occur after the owner's pump test plan is approved by the Director, and prior to injecting into the well. The results of this test do not need to appear on the water well report. This test shall be in addition to the minimum one-hour test requirement under OAR 690-210-0370. Requirements for conducting the minimum four-hour pump test as discussed in this section (this type of test) are as follows:

(a) Prior to testing, the well shall be idle for a period of at least four hours;

(b) The static water level in the well shall be measured at least three time, no less than twenty minutes apart, during the hour prior to pumping the well;

(c) The water shall be pumped into or from the well at a measured and steady rate. The rate shall approximate the maximum anticipated injection rate;

(d) The pump discharge shall be controlled as much as possible to maintain a constant rate during the test. The discharge rate shall be as close as reasonably possible to the anticipated injection rate during normal use of the well. Discharge rate shall be recorded at the beginning of the test and once every hour thereafter;

(e) Water levels in the well shall be physically measured by a standard and acceptable method. Visual estimation of water level is not acceptable. Acceptable methods include:

(A) An electric water level measuring tape;
(B) An air line dedicated to the well;
(C) An acoustic sounder;
(D) An electronic pressure transducer; or
(E) Other water level measuring methods approved in advance by the Director.

(f) The water level measurements shall occur at least at the minimum frequency outlined below: Time period -- Water level measurement schedule:

(i) First 10 minutes -- No more than 2 minutes apart;
(ii) 10 to 30 minutes -- No more than 5 minutes apart;
(iii) 30 to 100 minutes -- No more than 15 minutes apart;
(iv) 100 to 240 minutes -- No more than 30 minutes apart.

(g) After pumping stops, water level measurements shall be collected for a time equal to that of the pumping period, or until the well reaches 90 percent recovery from the

maximum drawdown, whichever occurs first. Recovery water level measurements shall be collected on the same time schedule as described in subsection (1)(f) of this rule;

(h) The pump discharge shall be physically measured by a standard and acceptable method. Visual estimation of flow rate is not acceptable. Acceptable methods include:

(A) A properly installed flow meter, designed for geothermal use, which is functional and calibrated within reasonable limits for the type of meter;

(B) A properly installed weir or flume;

(C) A properly installed and calibrated orifice plate and manometer;

(D) Known volume/time calculations (including calibrated bucket and stopwatch up to 60 gallons per minute);

(E) Properly installed and used ultrasonic flow measuring devices; or

(F) Other discharge methods approved in advance by the Director.

(2) The owner may consult with the Department before selecting representative nearby wells for monitoring during the pump test. If monitoring wells are selected in absence of specific instructions from the Department, the measurement of water levels in each well shall adhere to the schedule established in subsection (1)(f) of this rule.

(3) The Director may require the owner of the well to have a pump test performed that is more detailed than the test requirements described in sections (1) and (2) of this rule. This more detailed test could include, but is not limited to, increased frequency of water level measurements, increased test duration and increased monitoring of observation wells. Such modifications will be required when possible impacts resulting from the proposed injection include, but are not limited to, thermal or hydrologic interference with existing water rights, water quality degradation or physical or mechanical failure of the well structure.

(4) For flowing artesian wells, pump test specifications shall be prescribed by the Department on a case-by-case basis.

Stat. Auth.: ORS 537
Stats. Implemented: ORS 537
Hist.: WRD 18-1990, f. & cert. ef. 12-14-90; Administrative Reformatting 1-13-98

690-230-0090
Water Temperature Measurement

(1) The water well report prepared for any low-temperature geothermal well that is tested by pumping water from the well, shall include the temperature of the fluid as measured at the discharge point at the beginning and end of a timed production test as well as the maximum fluid temperature attained during the test. Bailing or pumping the well are acceptable methods of withdrawing water from the well during the test. Air testing is not acceptable.

(2) The well report prepared for any low-temperature geothermal well that is tested by pumping water into the well shall include the maximum temperature in the borehole and its corresponding depth.

(3) The well constructor is required to provide the temperature data on the water well report. The Director may use other temperature data in making the final determination of the bottom hole temperature.

Stat. Auth.: ORS 183, ORS 536, ORS 637 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 5-1986, f. 5-16-86, ef. 5-19-86; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0045; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0100
Additional Standards for Low-Temperature Geothermal Injection Wells
Procedures required to inject effluent into a low-temperature geothermal injection well shall not cause failure of the well casing and/or seal materials or other components of the well structure, including but not limited to, movement, displacement or fracturing of the overburden.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 5-1986, f. 5-16-86, ef. 5-19-86; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0050; WRD 18-1990, f. & cert. ef. 12-14-90

Low-Temperature Geothermal Effluent Disposal

690-230-0110
Injection Plan for Wells with an Anticipated Injection Rate Not Exceeding 15,000 Gallons Per Day
No low-temperature geothermal injection well shall be used for injection without approval of the Director in accordance with OAR 690-210-0070. The injection plan for the proposed injection of less than 15,000 gallons per day to a low-temperature geothermal injection well will consist of a water well report from both the injection and production wells. These well reports shall be sent to the Director for review. If the injection well have not yet been constructed, or if a water well report is not available from the injection or production well, acceptable data that shall be submitted as part of the injection plan include, but are not limited to, the following: geological information of the area, depth of the well(s) in question, water well reports from nearby wells, static water level data or water quality data from the well(s) in question. After review of the well reports, or other acceptable data, the Director may require water quality testing, as per OAR 690-230-0115(1) and (2), if the Director deems it necessary. The water quality testing may be required in the situations that include, but are not limited to, injection into a groundwater reservoir that is different from the producing groundwater reservoir, or when the well is of poor construction.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0055; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0115
Injection Plan for Wells with an Anticipated Injection Rate Exceeding 15,000 Gallons Per Day
No low-temperature geothermal injection well shall be used for injection without approval of the Director in accordance with OAR 690-210-0070. The injection plan for the proposed injection of

greater than 15,000 gallons per day to a low-temperature geothermal injection well shall include, but is not limited to, the following:

(1) Details of well construction, including water well reports for the production well and the injection well.

(2) Description of the number and location of water bearing zones from both production and injection wells.

(3) Water temperature data from both the production and injection wells.

(4) Water level data from both the production and injection wells. If information from the well report is not sufficient to determine the effects of injection, the Director may require additional geologic or hydrologic information, including but not limited to, temperature/depth logs of the wells.

(5) Water quality information including analysis by a lab-oratory certified by the Oregon Health Division for drinking water standards for the following parameters: arsenic, boron, calcium, carbonate or bicarbonate, chloride, fluoride, iron, magnesium, manganese, pH, potassium, silica, sodium, specific conductance, sulfate, suspended solids, total dissolved solids, and total coliform bacteria. If the low-temperature geothermal effluent is suspected to be of poor water quality or to be otherwise incompatible with the water in the receiving zone in the injection well, the Director may require additional specific water quality data. If the information on the well reports for the wells involved is not sufficient to determine the effects of injection, the Director may require additional geologic or hydrologic information, including but not limited to, temperature/depth logs of the wells. The Director may waive the requirement for specific portions or all of the chemical analyses if the fluid quality is known to be suitable for the intended production and injection.

(6) A map indicating the location and elevation of both the production well and the injection well in accordance with OAR 690-230-0045. All maps shall be drawn to a standard, even scale of not less than 4 inches = 1 mile. Small area maps may be more easily and clearly drawn to a larger scale, such as 1 inch = 400 feet. The well owner shall submit injection plans to the Director indicating proposed separation distances between production and injection wells on the parcel of land on which the production well is located, on the parcel of land on which the injection well is located, and on all adjacent parcels of land, as well as land surface elevation at each well head.

(7) Any planned safeguards to prevent substantial thermal or hydrologic interference with existing rights to appropriate groundwater and surface water and alteration of existing or potential drinking water supplies.

Stat. Auth.: ORS 537
Stats. Implemented: ORS 537
Hist.: WRD 18-1990, f. & cert. ef. 12-14-90

Water Rights Procedure

690-230-0120
Processing of Applications

The appropriator shall make application for a water right to appropriate low-temperature geothermal fluid unless an exemption is provided for under ORS 537.545.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0060; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0130
Exemption from Water Right Permit Application/Use of Low-Temperature Geothermal Fluid

(1) Low-temperature geothermal fluid appropriation for single industrial or commercial use including, but not limited to, electrical, agricultural, aquacultural, heating and/or cooling in an amount not exceeding 5,000 gallons per day shall be exempt from application for a water right as provided for under ORS 537.545.

(2) Low-temperature geothermal fluid appropriation for single or group domestic purposes including household heating and/or cooling shall be exempt from being required to apply for a water right as provided for under ORS 537.545 when the combined amount of groundwater for single or group domestic purposes, including household heating and/or cooling, does not exceed 15,000 gallons per day. Construction must comply with well construction and maintenance rules as per OAR 690-200-0230.

(3) The exemptions under sections (1) and (2) of this rule apply to the use of groundwater for any such purpose to the extent that it is beneficial and constitutes a right to appropriate groundwater equal to that established by a groundwater right certificate.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0065; WRD 18-1990, f. & cert. ef. 12-14-90

690-230-0140
Water Right Limitation for Nonstandard Effluent Disposal Systems

If the low-temperature geothermal effluent is disposed of by way of a nonstandard low-temperature geothermal effluent disposal system, the right to appropriate the low-temperature geothermal fluid shall be inferior to all subsequent rights for beneficial consumptive use and/or to the rights of those appropriators who make use of a standard low-temperature geothermal effluent disposal system. If a nonstandard low-temperature geothermal effluent disposal system is upgraded to a standard low-temperature geothermal effluent disposal system the associated water right retains the priority date established upon initial filing.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540
Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540
Hist.: WRD 12-1982, f. & ef. 12-14-82; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-065-0070; WRD 18-1990, f. & cert. ef. 12-14-90