

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

Table 200-1

Which standards apply?

The Department regulates the construction of borings through which ground-water 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

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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.

(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

**WATER RESOURCES DEPARTMENT
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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

**WATER RESOURCES DEPARTMENT
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WATER SUPPLYWELL CONSTRUCTION STANDARDS**

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 groundwater 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 groundwater.

(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 groundwater 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 groundwater, 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 groundwater 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 groundwater.
- (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 groundwater 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 groundwater 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 groundwater 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 groundwater. (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 groundwater 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 contaminants and/or contaminated groundwater 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 0.002mm 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 groundwater 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 groundwater 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 groundwater is sought or through which groundwater 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

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

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

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

**WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 210
WELL CONSTRUCTION STANDARDS**

OAR 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 groundwater 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

**WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 210
WELL CONSTRUCTION STANDARDS**

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

**WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 210
WELL CONSTRUCTION STANDARDS**

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 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.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795

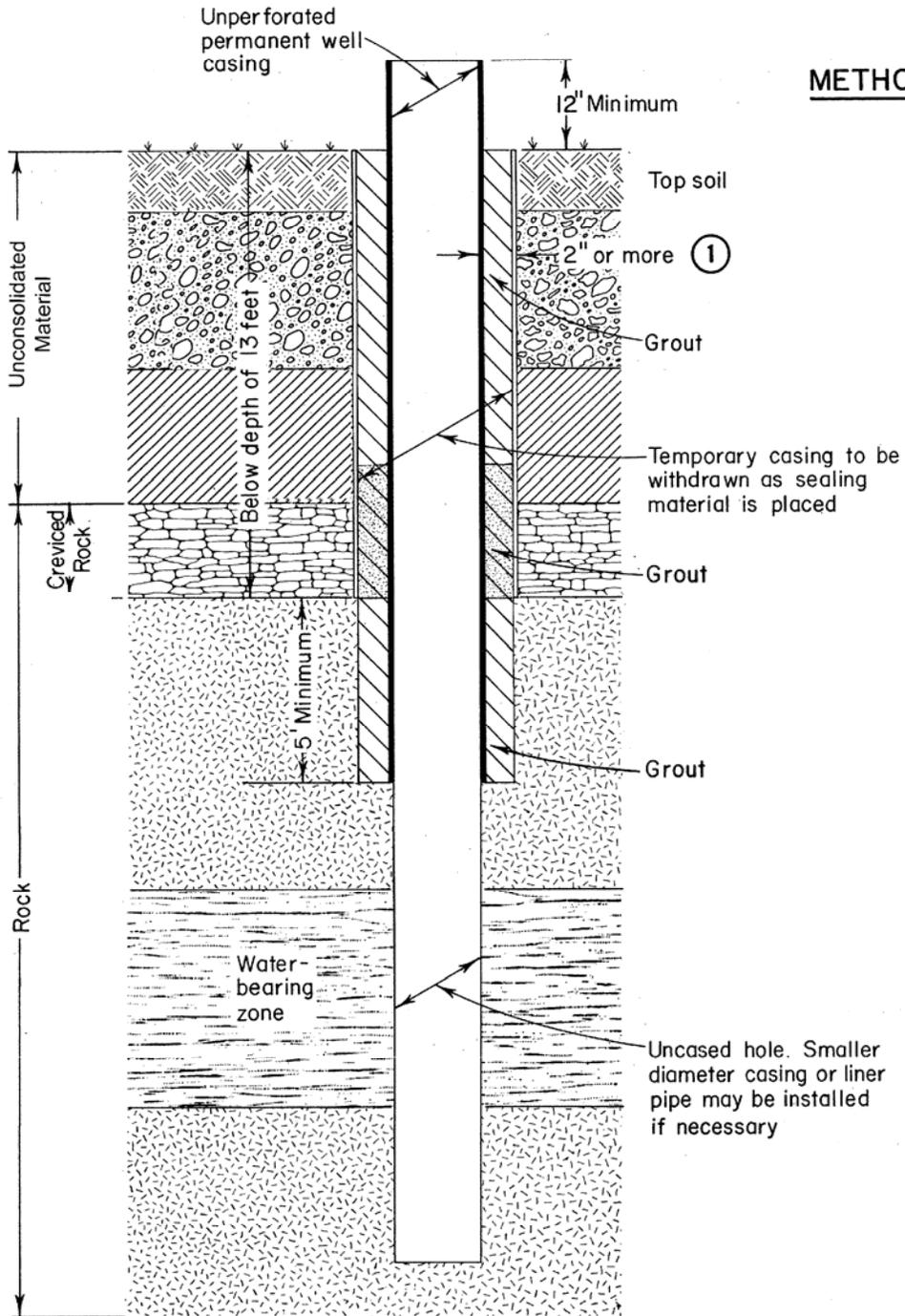
Stats. Implemented: ORS 183, 536, 537 & 540

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

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

Overlying Material - Unconsolidated Material

Water-bearing Formation - Rock

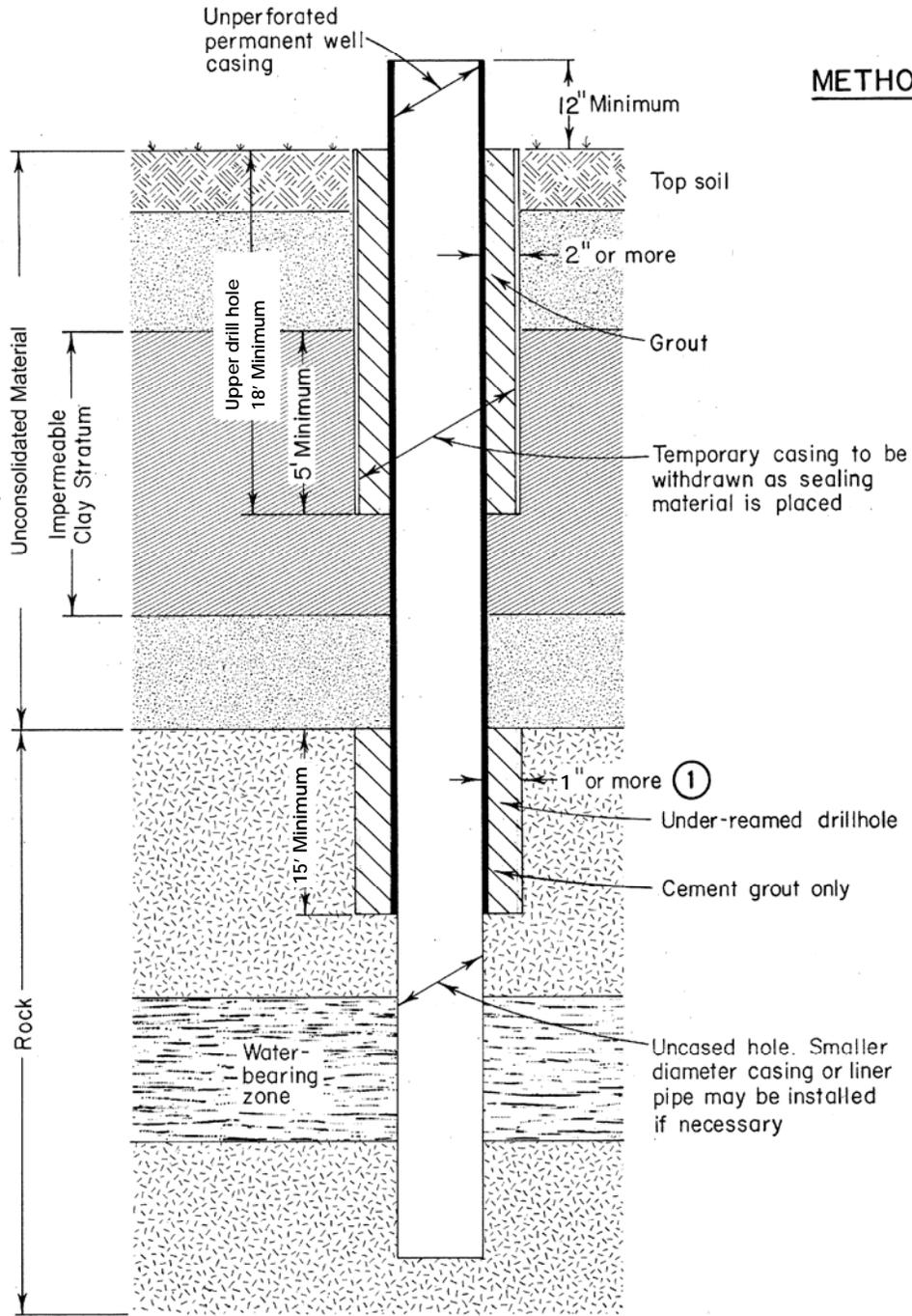


① 1" or more if cement grout is placed by grouting method A, B, or D. Annular sealing space requirements are based on nominal casing sizes.

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 RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 210
WELL CONSTRUCTION STANDARDS**

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

**WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 210
WELL CONSTRUCTION STANDARDS**

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 groundwater 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

**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 than 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)

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

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

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

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

**WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 240
CONSTRUCTION, MAINTENANCE, ALTERATION, CONVERSION AND
ABANDONMENT OF MONITORING WELLS, GEOTECHNICAL HOLES AND
OTHER HOLES IN OREGON**

690-240-0010

Definitions

The following definitions apply to terms as used in monitoring well, geotechnical hole and other hole rules, OAR 690-240-0005 to 690-240-0640. No other definitions of these same words apply:

- (1) "Abandonment, Permanent" means to remove all or any portion of a monitoring well from service by 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. 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) "Altering a Well" means the deepening, re-casing, perforating, re-perforating, installation of packers or seals, and other material changes in the design or construction of a well. Material changes include but are not limited to the installation or modification of well casing including casing extensions, or installation or modification of liner pipe, or under reaming of the borehole.
- (4) "Annular Space" means the space between the drillhole wall and the outer well casing.
- (5) "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. (Figure 240-1)
- (6) "Area of Known or Reasonably Suspected Contamination" means a site that is currently under investigation by the Oregon Department of Environmental Quality, U.S. Environmental Protection Agency, or other state or federal agency for the presence of contaminants, or a site where a prudent person would suspect contamination after conducting an appropriate inquiry consistent with good commercial or customary practice as to the nature of the property.
- (7) "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. (Figure 240-1).
- (8) "Artesian Monitoring Well" means a monitoring well in which groundwater 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 monitoring well.
- (9) "Bored Well" means a well constructed with the use of earth augers turned either by hand or by power equipment.
- (10) "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 groundwater.

(11) "Casing Seal" means the water tight seal established in the well bore between the well casing and the drillhole wall, above the filter pack seal, to prevent the inflow and movement of surface water or shallow groundwater 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".

(12) "Civil Engineer" means an individual registered by the State of Oregon to practice civil engineering.

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

(14) "Closed Loop Ground Source Heat Pump Boring" means a geotechnical hole, cased or uncased, constructed for the purpose of installing a closed loop heat exchange system for a ground source heat pump.

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

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

(17) "Confining Interval " means a low permeability material such as clay or solid, unfractured, consolidated rock immediately overlying an artesian (confined) aquifer. (Figure 240-1)

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

(19) "Contamination" means any chemical, ion, radionuclide, synthetic organic compound, microorganism, waste or other substance that does not occur naturally in groundwater or that occurs naturally but at a lower concentration.

(20) "Continuing Education" means that education required as a condition of licensure under ORS 537.747, to maintain the skills necessary for the protection of groundwater, 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.

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

(22) "Continuing Education Course" means a formal offering of instruction or information to licensees that provide continuing education credits.

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

(24) "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.

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

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

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

(28) "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.

(29) "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)

(30) "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.

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

(32) "Filter Pack" means the granular material placed in the annular space between the well screen and the borehole.

(33) "Filter Pack Seal" means the fine grained sand or dry bentonite which is placed in the annulus above the filter pack and prevents grout infiltration into the filter pack.

(34) "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".

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

(36) "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 hole" includes closed loop ground source heat pump borings.

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)

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

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

(39) "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)

(40) "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.

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

(42) "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.

(43) "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 monitoring 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, filter pack seal, or watertight cap has failed, or was inadequately installed may be considered a conduit for contamination.

- (44) "Horizontal Well" means a well that intentionally deviates more than 20 degrees from true vertical at any point.
- (45) "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.
- (46) "Jetted Well" means a well in which the drillhole excavation is made by the use of a high velocity jet of water.
- (47) "Leakage" means movement of surface and/ or subsurface water around the well casing or seal.
- (48) "Monitoring Well" means a well designed and constructed to determine the physical (including water level), chemical, biological, or radiological properties of groundwater.
- (49) "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).
- (50) "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).
- (51) "Monitoring Well Drilling Machine" means any driving, jetting, percussion, rotary, boring, auguring, or other equipment used in the construction, alteration, or abandonment of monitoring wells.
- (52) "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.
- (53) "Other Hole" means a hole other than a water supply well, monitoring well, or geotechnical hole, however constructed, in naturally occurring or artificially emplaced earth materials through which groundwater can become contaminated. Holes constructed under ORS Chapters 517, 520, and 522 are not subject to these rules. Examples of other holes are listed in OAR 690-240-0030.
- (54) "Perched Groundwater" means groundwater held above the regional or main water table by a less permeable underlying earth or rock material. (Figure 240-1)
- (55) "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.
- (56) "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.
- (57) "Petcock Valve" is a valve used to contain pressure which when opened will drain the line or pipe.
- (58) "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.
- (59) "Piezometer" means a type of monitoring well designed solely to obtain groundwater levels. Piezometers are prohibited in areas of known or reasonably suspected contamination. This term is synonymous with observation well.
- (60) "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.

(61) "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.

(62) "Potentiometric Surface" means the level to which water will rise in tightly cased wells. (Figure 240-1).

(63) "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.

(64) "Professional" means a person licensed or registered by the State of Oregon to construct monitoring wells, water supply wells, or practice geology or civil engineering. All licenses and registrations must be valid at the time of monitoring well, water supply well or geotechnical hole construction, alteration or abandonment as required by these rules.

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

(66) "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.

(67) "Remediation Well" means a well used for extracting contaminated groundwater from an aquifer. This term is synonymous with "extraction well" and "recovery well".

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

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

(70) "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.

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

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

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

(74) "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.

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

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

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

(78) "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.

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

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

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

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

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

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

(85) "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).

(86) "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).

(87) "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 240-1)

(88) "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.

(89) "Well" means any artificial opening or artificially altered natural opening, however made, by which groundwater is sought or through which groundwater 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 ORS 522.055 is regulated by the Department of Geology and Mineral Industries.

(90) "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.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795

Stats. Implemented: ORS 536.090 & 537.505 - 537.795

Hist.: WRD 14-1990, f. & cert. ef. 8-9-90; 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 3-2008, f. 12-22-08, cert. ef. 1-2-09; WRD 2-2012, f. & cert. ef. 2-2-12

**WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 240
CONSTRUCTION, MAINTENANCE, ALTERATION, CONVERSION AND
ABANDONMENT OF MONITORING WELLS, GEOTECHNICAL HOLES AND
OTHER HOLES IN OREGON**

690-240-0024

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) For above ground completions:

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

(b) For flush grade completions:

(A) Rivet or bolt the label to the inside of the monument skirting; or

(B) Band or strap the label to the well casing; or

(C) Insert the strap or band into the concrete in the bottom of the vault.

(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) The well identification label shall be attached in such a manner as to be easily readable upon inspection.

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

(6) 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.

(7) 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 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

**WATER RESOURCES DEPARTMENT
CHAPTER 690
DIVISION 240
CONSTRUCTION, MAINTENANCE, ALTERATION, CONVERSION AND
ABANDONMENT OF MONITORING WELLS, GEOTECHNICAL HOLES AND
OTHER HOLES IN OREGON**

690-240-0035

Geotechnical Holes: General Performance and Responsibility Requirements

(1) A geotechnical hole is defined in OAR 690-240-0010(36). Geotechnical holes, cased or uncased, are generally constructed to evaluate subsurface data or information (geologic, hydrogeologic, chemical, or other physical characteristics). Geotechnical holes are divided into the following classifications:

- (a) Temporary (abandoned within 72 hours) geotechnical holes;
- (b) Cased permanent geotechnical holes;
- (c) Uncased permanent geotechnical holes; or
- (d) Slope stability geotechnical holes.

(2) A geotechnical hole report shall be signed by a professional and must be submitted to the department if the geotechnical hole is:

- (a) Greater than 18 feet deep;
- (b) Within 50 feet of a water supply or monitoring well;
- (c) Used to make a determination of water quality; or
- (d) Constructed in an area of known or reasonably suspected contamination.

(3) Geotechnical holes that do not meet any of the criteria spelled out in OAR 690-240-0035(2) do not require a geotechnical hole report to be filed with the Department, but shall be required to have a professional as described in 690-240-0035(4)(c) be responsible for the construction and abandonment of the geotechnical hole.

(4)(a) Although enforcement actions may be exercised against other parties, the landowner of the property where the geotechnical hole is constructed is ultimately responsible for the condition, use, maintenance, and abandonment of the geotechnical hole;

(b) Conversion of a geotechnical hole to a water supply or monitoring well shall be considered by the Department on a case by case basis

(4)(c) When a geotechnical hole report is required, the professional responsible for the construction, alteration or abandonment of a geotechnical hole shall have one of the following certifications or licenses at the time the professional signs the geotechnical hole report:

- (A) A valid Oregon Monitoring Well Constructor's License;
- (B) A valid Oregon Water Supply Well Constructor's License;
- (C) Valid certification by the State of Oregon as a Registered Geologist; or
- (D) Valid certification by the State of Oregon as a Professional Engineer.

(d) The professional shall provide proof of license, certification or registration and photo identification to Department employees upon request.

(e) In order to protect the groundwater resource, all geotechnical holes shall be constructed, operated, used, maintained, and abandoned in such a manner as to prevent contamination or waste of groundwater, or loss of artesian pressure.

(f) If the geotechnical hole is completed above ground, it shall have a minimum casing height of one foot above finished grade and a lockable cap with lock shall be attached to the top of the

casing. If a geotechnical hole, except a slope stability hole, is completed flush with the land surface, a lockable watertight cap with lock, shall be attached to the top of the casing. A vault or monument designed to be watertight, level with the ground surface, shall be installed to prevent the inflow of surface water. The cover must be designed to withstand the maximum expected loadings.

(5)(a) A 'Geotechnical Hole Report' shall be prepared for each geotechnical hole, including unsuccessful geotechnical holes, constructed, altered, converted, or abandoned if the hole meets any of the requirements of OAR 690-240-0035(2) above.

(b) The 'Geotechnical Hole Report' shall be filed with the Department within 30 days of the completion of the geotechnical hole;

(c) The report 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 professional, and the second copy shall be given to the landowner or customer who contracted for the construction of the geotechnical hole;

(d) In the event any drilling equipment or other tools are left in a geotechnical hole the professional shall enter this fact on the Geotechnical Hole Report;

(e) A copy of any special authorizations or special standards issued by the Director shall be attached to the Geotechnical Hole Report. See OAR 690-240-0006 for information concerning special standards;

(f) The report of geotechnical hole construction shall include, as a minimum, the following:

(A) Landowner name and address;

(B) Started/Completed date;

(C) Location of the geotechnical hole 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) Use of geotechnical hole;

(E) Type of geotechnical hole;

(F) Depth;

(G) Map showing location of geotechnical hole on site must be attached and shall include an approximate scale and a north arrow;

(H) General hydrologic and geologic information as indicated on the Geotechnical Hole Report; and

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

(6) Temporary geotechnical holes:

(a) Temporary geotechnical holes include but are not limited to: drive points, soil and rock borings, temporary sample holes, permeability test holes, and soil vapor holes;

(b) Temporary geotechnical holes shall be abandoned within 72 hours of initial construction;

(c) Any temporary casing that has been installed shall be removed as part of the abandonment.

(7) Cased permanent geotechnical holes

(a) Cased permanent geotechnical holes include but are not limited to: gas migration holes, cathodic protection holes, wet soil monitoring holes, and vapor extraction holes;

(b) Permanent casing installed in a geotechnical hole shall meet the casing requirements in OAR 690-240-0430, 690-210-0210, or 690-210-0190.

(c) The borehole diameter for cased permanent geotechnical holes shall be at least four inches larger than the nominal casing diameter. If the cased permanent geotechnical hole is constructed using a hollow stem auger drilling machine, the inside diameter of the auger must be at least four

inches larger than the nominal diameter of the casing to be installed. Cased permanent geotechnical holes installed using direct push technology shall meet the annular space requirements in OAR 690-240-0540.

(d) Cased permanent geotechnical holes, except wet soil monitoring holes, shall be sealed in accordance with the filter pack seal requirements in OAR 690-240-0460, and the casing seal requirements in OAR 690-240-0475.

(e) Wet soil monitoring holes shall have a casing seal that extends to a minimum depth of one-foot. The casing seal shall be placed in accordance with OAR 690-240-0475.

(f) Wet soil monitoring holes shall not exceed three and one-half feet in depth.

(8) Uncased permanent geotechnical holes:

(a) Uncased permanent geotechnical holes include but are not limited to: pneumatic and electrical piezometers;

(b) Temporary casing can be used during the construction of the uncased permanent geotechnical hole but must be removed prior to completion. Surface casing (5 feet maximum) may be installed for placement of logging or recording equipment.

(9) Slope stability geotechnical holes.

(a) Slope stability geotechnical holes include but are not limited to: slope instrumentation holes such as slope inclinometers, and slope remedial holes.

(b) Slope stability geotechnical holes are defined in OAR 690-240-0010(74). Such holes shall be constructed, operated, used, maintained, and abandoned in such a manner as to prevent contamination or waste of groundwater.

(c) When a Geotechnical Hole Report is required under OAR 690-240-0035(2) for a slope stability geotechnical hole that is constructed to facilitate water level measurements, an affidavit from an engineer or geologist qualified to perform geotechnical investigations shall be attached to the Geotechnical Hole Report. The affidavit shall have the qualified engineer or geologist's stamp on it and shall certify that the slope stability geotechnical hole is on a landslide or a mass-wasting feature.

(10) Geotechnical Holes abandonment:

(a) Geotechnical holes shall be abandoned in the following manner:

(A) If it can be verified that the geotechnical hole was constructed in accordance with these rules, it shall be abandoned by filling the well from the bottom up with an approved grout as described in OAR 690-240-0475. The casing shall then be removed below grade, as compatible with local site conditions and land practices. The following are acceptable methods of original geotechnical hole construction verification:

(i) A geotechnical hole report previously submitted to the Water Resources Department;

(ii) Geotechnical hole information submitted to the Oregon Department of Environmental Quality;

(iii) Other information as approved by the Water Resources Department;

(B) If the geotechnical hole construction cannot be verified by means listed in section (A) of this rule, or if the geotechnical hole was not constructed in accordance with these rules, the geotechnical hole shall be abandoned by completely redrilling the hole to a minimum of the original diameter. All casing, screen, annular sealing material, drill cuttings, debris, and filter pack material shall be removed prior to sealing.

(b) Geotechnical holes constructed to collect a water quality sample shall be abandoned in accordance with OAR 690-240-0510.

Stat. Auth.: ORS 537.780

Stats. Implemented:

Hist.: 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 3-2008, f. 12-22-08, cert. ef. 1-2-09; WRD 2-2012, f. & cert. ef. 2-2-12; WRD 3-2014, f. & cert. ef. 11-25-14

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690-240-0043

Construction Standards

- (1) If permanent casing is needed in a ground source heat pump boring, it shall meet the standards set out in OAR 690-210-0190 through 690-210-0220 for steel and plastic.
- (2) Site specific conditions shall be assessed to determine the best method and materials to be used for sealing the boring annulus to protect the groundwater resource and that method shall meet the standards set out in OAR 690-210-0300 through 690-210-0360 for sealing wells.
- (3) The diameter of the borehole for cased and uncased ground source heat pump borings shall allow placement of the heat exchange loop and grout pipe to the bottom of the boring as follows:
 - (a) For installation of a 3/4 inch loop, the diameter of the borehole shall be a minimum of 4 inches;
 - (b) For installation of a 1 inch loop, the diameter of the borehole shall be a minimum of 4 1/2 inches; and
 - (c) For installation of a 1 1/4 inch loop, the diameter of the borehole shall be a minimum of 5 inches.
- (4) The type of sealing material used shall be compatible with the heat exchange loop material and permanent casing material used in the construction of the boring.

Stat. Auth.: ORS 536.027, 537.780

Stats. Implemented:

Hist.: WRD 2-2012, f. & cert. ef. 2-2-12

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TABLE 240-1

Which standards apply?

The Department regulates the construction of borings through which ground-water 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 Wells
Aquifer Storage and Recovery Well	Water Supply Wells
Cathodic Protection Hole	Geotechnical Holes
Community Well	Water Supply Wells
Construction Hole	Other Holes
Dewatering Well	Water Supply Wells
Domestic Well	Water Supply Wells
Drive Point (Core holes)	Geotechnical Holes
Drive Point Well (Dewatering)	Water Supply Wells
Drive Point Well (Water Sampling)	Monitoring Wells
Drive Point Well (Water Supply)	Water Supply Wells
Dry (Disposal) Well	Other Holes
Elevator Shaft	Other Holes
Extraction Well	Monitoring Wells
Gas Migration Hole	Geotechnical Holes
Geothermal Well	Water Supply Wells
Gravel Pit	Other Holes
Heat Exchange Hole (Closed Loop)	Geotechnical Holes
Heat Exchange Hole (Open Loop)	Water Supply Wells
Horizontal Drain (Slope Stability)	Geotechnical Holes
Horizontal Well (Monitoring)	Monitoring Wells
Horizontal Well (Water Supply)	Water Supply Wells

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

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690-240-0395

Monitoring Well Report Required (Monitoring Well Log)

- (1) A monitoring well report shall be prepared for each monitoring well constructed, altered, converted, or abandoned including unsuccessful monitoring wells. The log shall be certified as correct by signature of the Monitoring Well Constructor constructing the monitoring well. The completed log shall also be certified by the bonded Monitoring Well Constructor responsible for construction of the monitoring well. A monitoring 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 Monitoring Well Constructor, and the second copy shall be given to the customer who contracted for the construction of the monitoring well.
- (3) The bonded Monitoring Well Constructor shall file the monitoring well log with the Director within 30 days after the completion of the construction, alteration, conversion, or abandonment of the monitoring well.
- (4) The trainee or Monitoring Well Constructor operating the monitoring well drilling machine shall maintain a rough log of all geologic strata encountered and all materials used in the construction of the monitoring well. This log shall be available for inspection by the Watermaster or other authorized agent of the Water Resources Department or other delegated agency representative at any time before the monitoring 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 monitoring well this fact shall be entered on the monitoring well report.
- (6) A copy of any special authorizations or special standards issued by the Director shall be attached to the monitoring well report.
- (7) The report of monitoring 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) Type and amount of sealant used and measured weight of the grout slurry as required in OAR 690-240-0475(2)(g);
 - (i) Temperature of water;
 - (j) Total dissolved solids (TDS);
 - (k) Map showing location of monitoring well on site, must be attached and shall include an approximate scale and a north arrow; and
 - (l) 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 14-1990, f. & cert. ef. 8-9-90; 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 690-240-0095; WRD 4-2004, f. & cert. ef. 6-15-04; WRD 2-2006, f. & cert. ef. 6-20-06

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690-240-0440

Additional Standards for Artesian Monitoring Wells

(1) Monitoring 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 except as noted in OAR 690-240-0525 concerning piezometers. Watertight unperforated casing shall extend and be sealed, according to OAR 690-240-0475, at least five feet into the confining interval immediately overlying the artesian water-bearing zone.

(2) If an artesian monitoring 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.

(3) All flowing artesian monitoring 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.

(4) All flowing artesian monitoring 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.

Stat. Auth.: ORS 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; 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, Renumbered from 690-240-0118

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690-240-0510

Abandonment of Monitoring Wells

Proper abandonment of monitoring wells will prevent both vertical movement of water within the well bore and infiltration of surface water into the well:

(1) In areas where groundwater contamination has been identified, except as described in number (4) below, abandonment shall require the borehole to be completely redrilled to a minimum of the original diameter. All casing, screen, annular sealing material, drill cuttings, debris, and filter pack material shall be removed prior to sealing.

(2) In areas where groundwater contamination has not been identified, if it can be verified that the monitoring well was constructed in accordance with these rules, it shall be abandoned by filling the well from the bottom up with an approved sealant as described in OAR 690-240-0475. The casing shall then be removed below grade, as compatible with local site conditions and land practices. The following are acceptable methods of original well construction verification:

(a) A well report in accordance with OAR 690-240-0395;

(b) Well construction information submitted to the Oregon Department of Environmental Quality;

(c) Information obtained through down-hole geophysical logging; or

(d) Other information as approved by the Water Resources Department.

(3) In areas where groundwater contamination is not present, and if the monitoring well construction cannot be verified by means listed in section (2) of this rule, the well shall be abandoned according to section (1) of this rule.

(4) In contaminated areas where remediation has occurred, an approved special standard is required to abandon a well unless it is abandoned according to section (1) of this rule.

Abandonment procedures will be considered on a case by case basis. The Department will consult with the state or federal agency that supervised the remediation in determining the appropriate abandonment method. In cases where there was no agency oversight, the Department will consider any information supplied by the licensed and bonded Monitoring Well Constructor in determining the appropriate abandonment procedure.

(5) Grout slurries shall be placed from the bottom up by a grout pipe to avoid segregation or dilution of the sealant. The discharge end of the grout pipe shall be submerged in the grout to avoid breaking the seal while filling the annular space. Grout slurries used to abandon monitoring wells shall conform to the requirements of OAR 690-240-0475.

(6) 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 690-240-0395, plus:

(a) Method of abandonment;

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

(7) When abandoning artesian monitoring wells, in addition to sections (1)-(6) of this rule, the flow 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 interval immediately above the artesian water bearing zone. An approved grout shall be used to fill the well to land surface as specified in OAR 690-240-0475.

(8) Monitoring wells that were constructed under special standards will require the abandonment method to be approved by the Department.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795

Stats. Implemented: ORS 536.090 & 537.505 - 537.795

Hist.: WRD 14-1990, f. & cert. ef. 8-9-90; 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 690-240-0135; WRD 2-2006, f. & cert. ef. 6-20-06

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690-240-0525

Piezometers

It is prohibited to construct a piezometer in an area of known or reasonably suspected contamination.

NOTE: The Water Resources Department and the Department of Environmental Quality have information sources to use in determining if contaminants are present. Customary drilling practice as conducted by licensed professional must be included as part of the appropriate inquiry to determine if contaminants are present or reasonably suspected.

(1) A piezometer is defined in OAR 690-240-0010(59). Piezometers are a type of monitoring well and shall meet current monitoring well rules except for the following:

(a) Borehole size with depth requirements:

(A) For piezometers with a sealing depth less than 50 feet deep, the borehole diameter shall be at least two and one half inches (2.5") larger than the nominal casing diameter. If the piezometer is constructed using a hollow stem auger drilling machine, the inside diameter of the auger must be at least 2.5 inches larger than the nominal diameter of the casing to be installed;

(B) For piezometers with a sealing depth greater than 50 feet deep, the borehole diameter shall be at least three inches larger than the nominal casing diameter. If the piezometer is constructed using a hollow stem auger drilling machine, the inside diameter of the auger must be at least 3 inches larger than the nominal diameter of the casing to be installed.

(b) Surface Completion:

(A) Piezometers shall be protected as described in OAR 690-240-0420 concerning monitoring wells.

(c) If an artesian piezometer flows at land surface, it shall be equipped with a control valve or a watertight mechanical cap, so that all flow of water from the well can be completely stopped. Flowing artesian piezometers are not required to be equipped with a pressure gauge placed on a dead-end line or a petcock valve;

(d) The special cleaning and drill cutting storage requirements in OAR 690-240-0450 shall not apply to piezometers because they may not be constructed in areas of known or reasonably suspected contamination. However, all equipment and materials used in the construction of a piezometer shall be free of foreign materials and contaminants prior to entry into the well;

(e) Use of commercially fabricated screens are not required for piezometers. The screens installed shall be in new or like new condition, being free of pits or breaks, and shall be free of foreign materials and contaminants prior to installation;

(f) The filter pack requirements of OAR 690-240-0460(5) shall not apply to piezometers because they are not constructed in areas of known or reasonably suspected contamination;

(g) A minimum three foot annular seal is required. If a grout slurry is used, the filter pack seal requirements of 690-240-0460(6) apply. If a piezometer is completed with a flush monument, the annular seal shall extend a minimum of three feet below the monument seal.

(2) Piezometer well abandonment: Piezometer wells shall be abandoned as described in OAR 690-240-0510 concerning monitoring wells.

Stat. Auth.: ORS 537.780

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

Hist.: 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, Renumbered from 690-240-0137; WRD 4-2004, f. & cert. ef. 6-15-04; WRD 5-2015, f. & cert. ef. 7-1-15

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690-240-0540

Direct Push Monitoring Wells and Piezometers

- (1) Monitoring wells and piezometers that are installed using direct push technology shall comply with the applicable standards in these.
- (2) Monitoring wells and piezometers that are installed using direct push technology shall also comply with the following standards:
 - (a) Only prepacked screens shall be used; and
 - (b) The outside diameter of the borehole shall be a minimum of two inches greater than the outside diameter of the well casing; and
 - (c) Granular bentonite shall not be used in the casing seal interval below the static water level; and,
 - (d) Monitoring wells and piezometers shall not be constructed through more than one water bearing formation and shall not be greater than 50 feet in depth; and
 - (e) Monitoring wells and piezometers that extend deeper than 30 feet shall be equipped with centering guides to insure proper centering of casing. Guides shall be spaced at minimum ten foot intervals and attached to the casing.
- (3) Monitoring wells and piezometers larger than two inches in diameter shall not be installed using direct push technology without prior Department approval.

Stat. Auth.: ORS 536.090 & 537.505 - 537.795

Stats. Implemented: ORS 536.090 & 537.505 - 537.795

Hist.: WRD 14-1990, f. & cert. ef. 8-9-90; 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 690-240-0145