



Oregon

Kate Brown, Governor

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MEMORANDUM

TO: Oregon Water Resources Commission

FROM: Thomas M. Byler, Director

SUBJECT: Agenda Item K, June 19, 2015
Water Resources Commission Meeting

Request for Adoption of Rules – OAR Chapter 690, Divisions 200, 205, 210, 215 and 240 – Special Area Well Construction Standards

I. Introduction

During this agenda item, the Commission is asked to adopt final proposed rules that establish well construction special area standards for the Mosier area of Wasco County. In addition to the Mosier standards, the Department is also proposing other minor changes to clarify, clean-up, and modernize the well construction rules. The final proposed rules are included in Attachment 1.

II. Background

The Well Construction and Compliance Section is responsible for ensuring compliance with the laws and regulations related to well drilling and other enforcement actions related to the use of water in the State. The Well Construction Program licenses well constructors, enforces well construction statutes and standards, and maintains the repository of well log reports for the State of Oregon.

Constructing wells that meet Department standards in the Mosier area is difficult due to the presence of multiple layered aquifers. The Mosier area of Wasco County has declining water levels due, in part, to improper well construction. The Department originally organized a technical committee to discuss concerns brought forward by the Mosier Watershed Council. The technical committee met in November and December 2014.

III. Rulemaking Process

After the final technical committee meeting, the Department appointed a Rules Advisory Committee (RAC) to assist with the development of permanent rules. The RAC included Kevin Gill, Clouser Drilling; Greg and Malia Kupillas, Pacific Hydro-Geology Inc.; Tom Pattee, Oregon Health Authority; Steve Schneider, Schneider Water Services; Floyd Sippel, Sippel Well Drilling; John Stadel, Arrow Drilling; Steve Stadel, Westerberg Drilling; and Garry Zollman, Zollman's Larry Burd Well Drilling LLC. The RAC met in January, February, and March 2014, which resulted in preparation of a public hearing draft (See Attachment 1).

The Department submitted a Notice of Proposed Rulemaking Hearing and Statement of Need and Fiscal Impact to the Secretary of State on March 13, 2015. The notice was published April 1, 2015, in the *Oregon Bulletin*. Public hearings were held in Mosier on April 22, 2015, and in Salem on April 24, 2015. The public comment period extended from April 1 through April 24, 2015.

Four written comments were received by the Department and two individuals provided verbal testimony at the public hearing in Mosier. All comments received by the deadline were reviewed and considered. The comments were all in support of the proposed changes and are included as Attachment 2 and Attachment 3.

The Ground Water Advisory Committee (GWAC), which advises the Commission on rules for development and protection of groundwater (ORS 536.090), met on April 17, 2015, to review and discuss the draft rules. GWAC unanimously recommended that the Commission adopt the final proposed rules as written.

IV. Discussion of Rules

These rules address the construction of new wells in the Mosier area by requiring licensed well constructors responsible for the work to consult with the Water Resources Department prior to the permanent installation of casing and seal material. Improper casing and sealing has allowed aquifers to commingle by gravity flow or artesian pressure from one aquifer to another. This has contributed to long-term groundwater level declines in this area.

For the Mosier area, the rules require an additional notice period prior to the start of construction activities to allow the Department time to research information regarding the location of the proposed well and to have discussions with the landowner and well constructor about the proposed construction methods. A dedicated measuring tube is also required to be installed at the time of pump installation, repair, or replacement so the water level in the well can be determined at any time.

In addition to addressing Mosier issues, the Department is also pursuing other rulemaking in the interest of protecting the groundwater resources and water users of the State:

- The proposed rules include a number of changes that address old or incorrect references. These include modifying the definition of silt so that the definition in Division 200 matches the definition in Division 240, correcting old rule and table references, and removing dates in rule that have expired.
- The proposed rules provide greater direction and clarity to well constructors regarding certain well and geotechnical hole construction, maintenance, alteration, conversion and abandonment activities. Specifically, the proposed rules make it easier for well constructors to determine the classification of injection wells installed for remediation purposes, and thereby take appropriate steps to follow the Department's protocols based on the classification.
- The Department has received feedback that the currently adopted rules are confusing in regards to construction standards for dug wells. The proposed revisions to the rules seek to provide greater clarity to reduce this confusion.

- There currently is no required setback from permanent structures for new water wells, which can lead to problems with drilling equipment access and proper abandonments in the future. Current rules are also vague about the requirements for protecting piezometers to prevent contamination and other issues; the proposed rules provide greater clarity on the requirements.

V. Conclusion

The final proposed rules in Attachment 1 were developed in conjunction with stakeholders and provide clear standards and guidance for well constructors, landowners, Oregon Registered Geologists and Oregon Professional Engineers when constructing, altering or abandoning water supply wells, monitoring wells and geotechnical holes in Oregon. The proposed rules that are being brought to the Water Resources Commission represent no change from the hearing draft.

VI. Alternatives

The Commission may consider the following alternatives:

1. Adopt the final proposed rules in Attachment 1
2. Adopt modified final proposed rules
3. Not adopt the final proposed rules and request the Department further evaluate the issues

VII. Recommendation

The Director recommends Alternative 1.

Attachments:

1. Final Proposed Rules Chapter 690, Divisions 200, 205, 210, 215, 220 and 240
2. Copies of Written Comments Received
3. Transcript of Public Hearing Held on April 22, 2015

Kristopher Byrd, Manager

Well Construction & Compliance Section (503) 986-0851

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 200
WATER SUPPLY WELL CONSTRUCTION STANDARDS

TABLE 200-1

WHICH SET OF STANDARDS APPLIES?

The Department currently regulates the construction of borings through which ground water could 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 which category they fall into. 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 [] there is a question as to what standard applies or what agency may need to be contacted.

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

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 (Coring)	Geotechnical Hole
Drive Point Well (Dewatering)	Water Supply Well
Drive Point (Water Sampling)	Monitoring Well
Drive Point (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
<i>[Hydrologic Data Hole]</i>	<i>[Geotechnical Hole]</i>
Inclinometer	Geotechnical Hole
Industrial Well	Water Supply Well

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Language to be added is bolded and underlined.

Injection Well (Water)	Water Supply Well
<u>Injection Well (Remediation) (>72 Hours)</u>	<u>Monitoring Well</u>
<u>Injection Well (Remediation) (<72 Hours)</u>	<u>Geotechnical Hole</u>
Irrigation Well	Water Supply Well
Monitoring Well[(>72 Hours)]	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 (<[IO]10 Feet)	Other Hole
Rock Boring (> [IO]10 Feet)	Geotechnical Hole
Seismic Shot Hole	Geotechnical Hole
Slope Stability Hole	Geotechnical Hole
Soil Boring (< 10 Feet)	Other Hole
Soil Boring (>10 Feet)	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
<u>Temporary Monitoring Well (>72 Hours)</u>	<u>Monitoring Well</u>
Trench	Other Hole
Underground Storage Tank (UST) Pit	Other Hole
Vapor Extraction Hole	Geotechnical Hole
Wetland Delineation Hole	Other Hole

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Language to be added is bolded and underlined.

APPENDIX 1

Additional Requirements by Other State Agencies of Oregon

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

OREGON HEALTH <u>AUTHORITY</u> [<i>DIVISION</i>] 800 NE Oregon Street Portland, OR 97232 (serving more than three single residents) [<i>www.ohd.hr.state.or.us</i>] <u>http://www.oregon.gov/OHA/Pages/index.aspx</u>	ORS Chapter 448	Municipal Water Supply Systems Public Water Supply Systems Community Water Supply Systems Source Water Protection
BUILDING CODES AGENCY 1535 Edgewater NW Salem, OR 97304-4635 www.cbs.state.or.us/extemal/bcd	ORS Chapter 446	Electrical and Plumbing for all Commercial Enterprises Mobile Home Park Water Supply Systems
OREGON PUBLIC UTILITY COMMISSIONER 550 Capitol St NE Salem, OR 97301-2551 www.puc.state.or.us	ORS Chapter 757	Private Owners (water supply systems, 200 homes or more)
DEPARTMENT [] OF ENVIRONMENTAL [] QUALITY 811 SW 6 th Portland, OR 97204-1390 www.deq.state.or.us	ORS Chapter 468	Water Quality Monitoring Underground Injection Systems Source Water Protection
SECRETARY OF STATE CORPORATION DIVISION Business Services Division Public Service Bldg., Suite 180 Salem, OR 97310 www.sos.state.or[] .us		Business Registry for Water Districts

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690-200-0028

Designated Special Area Standards

(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 ¼ 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 ¼ 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 ¼ 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 ¼ corner of Section 22; thence east to the Center ¼ 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 ¼ corner of Section 24; thence north to the North ¼ 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.

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- (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 stratum 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.**

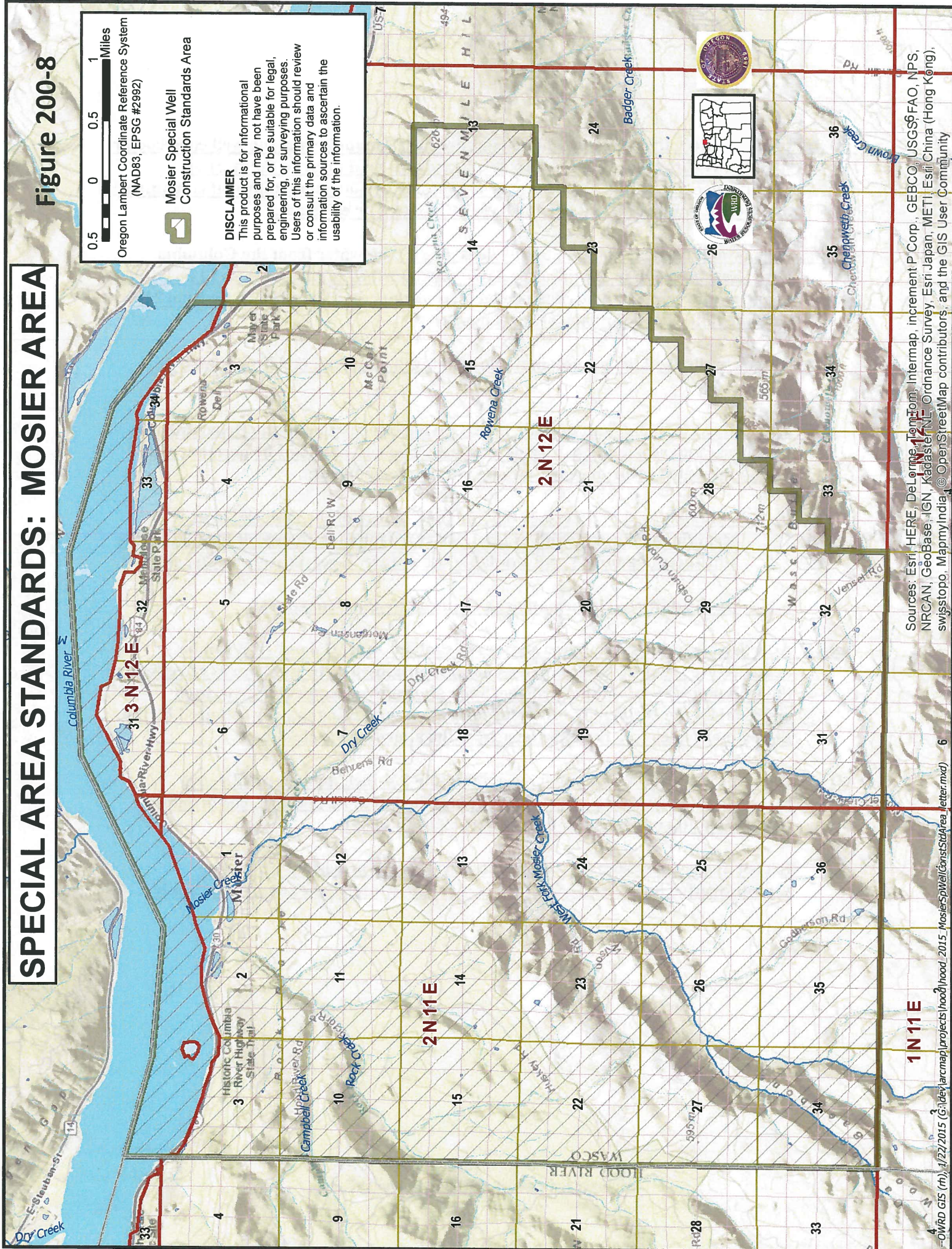
SPECIAL AREA STANDARDS: MOSIER AREA

Figure 200-8

0.5 0 0.5 1 Miles
Oregon Lambert Coordinate Reference System
(NAD83, EPSG #2992)

Mosier Special Well Construction Standards Area

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690-200-0050

Definitions

(86) "Public Water System" means a system for the provision to the public of piped water for human consumption, if such [a]system has more than three service connections or supplies water to a public or commercial establishment [*which*]**that** operates a total of at least 60 days per year, and [*which*]**that** is used by ten or more individuals per day[*or is a facility licensed by the Oregon Health Division*]. **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."**

(99) "Silt" means an unconsolidated sediment composed predominantly of particles between 0.06 mm and 0.002₂[5] mm in diameter.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690, DIVISION 205
WATER SUPPLY WELL CONSTRUCTION STANDARDS; LICENSING

690-205-0185

Water Supply Well Drilling Machines

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

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

690-210-0030

Placement of Water Supply Wells

(1) No person shall construct a water supply well; *[within 50 feet of any septic tank; 100 feet of a septic drainline or sewage disposal structure or facility; 50 feet of a closed sewage or storm drainage system (except those in or underneath a building); 50 feet of a confined animal feeding or holding area; 50 feet of any animal waste holding area such as a pond or lagoon; 100 feet of any sewage sludge disposal area; or 500 feet of a hazardous waste storage, disposal or treatment unit without written permission of the Director. Rain water gutter downspouts and drains are exempt from the above setback requirements. The constructor should consider whether greater distances are required for the protection of the ground water depending on the topography and local geology.]*

(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***[unit]* without written permission of the Director. *[Rain water gutter downspouts and drains are exempt from the above setback requirements. The constructor should consider whether greater distances are required for the protection of the ground water depending on the topography and local geology.]*

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

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

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

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

690-210-0130

Sealing of Wells in Unconsolidated Formations Without Significant Clay Beds

Water supply wells drilled into unconsolidated water-bearing strata overlain by unconsolidated materials, such as sand, silt, or gravel, without significant clay beds, shall have a watertight, unperforated well casing extending to a minimum of eighteen feet below land surface. An upper oversize drillhole, four inches greater in diameter than the nominal diameter of the casing, shall be constructed to a minimum depth of 18 feet. To prevent caving, a temporary surface casing, at least 18 feet in length, shall be used throughout the construction of the annular seal space. The annular space between the permanent well casing and the upper, oversize drillhole shall be completely full of grout in accordance with OAR 690-210-0310 thru 690-210-0360 after the permanent well casing is set into final position. The temporary surface casing shall be removed from the well as the annular space is filled. (See Figure 210-2[1]) [Figure not included, see ED. Note.][ED. NOTE: Figures referenced in this rule are available from the agency.]

690-210-0140

Sealing of Water Supply Wells in Unconsolidated Formations with Significant Clay Beds

Water supply wells drilled into water-bearing strata 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 a clay or other impermeable stratum 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 or other impermeable stratum 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 full of 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[2].) [ED. NOTE: Figure referenced in this rule are available from the agency.]

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, or similar materials, shall be constructed in accordance with one of the following methods:

(a) Method 1 (Continuous Seal): An upper drillhole, 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, uncreviced, consolidated rock overlying the water-

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bearing rock formation below a depth of 13 feet. Unperforated permanent well casing shall extend to this same depth. The annular space between the casing and the drillhole wall within the rock formation shall be filled with grout. The upper annular space between the casing and the drillhole wall shall be filled from land surface to at least five feet into an impermeable clay stratum below a depth of 13 feet. The annular space between the upper and lower sealing intervals shall be filled with an impermeable sealing material. If necessary to complete the well, a smaller diameter well casing, liner pipe, or well screen may be installed. If cement grout is placed by a suitable method from the bottom of the 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 casing. (See Figure 210-4[3].);

(b) Method 2 (Step-Down Casing): An upper drillhole, four inches greater in diameter than the permanent well casing to be installed, shall extend from land surface to at least five feet into an impermeable clay stratum below a depth of 13 feet. Unperforated, permanent well casing shall extend to, and be driven into, solid, uncreviced, consolidated rock overlying the water-bearing rock formation. A lower drillhole, equal in diameter to the inside diameter of the upper permanent well casing, shall be constructed at least five feet into solid uncreviced rock overlying the water-bearing formation. A smaller diameter casing, at least two inches smaller in diameter than the diameter of the upper permanent well casing, shall extend at least five feet into the lower drillhole and at least eight feet into the upper permanent well casing. The annular space between the upper oversize drillhole and the permanent well casing, and the annular space between the smaller diameter lower casing and the lower drillhole, shall be completely filled with grout in accordance with OAR 690-210-0310 through 690-210-0360 after the permanent well casing and the lower casing are set into final position. (See Figure 210-5[4].);

(c) Method 3 (Under-Reaming): An upper drillhole, four inches greater in diameter than the permanent well casing to be installed, shall extend from land surface to at least five feet into an impermeable clay stratum below a depth of 13 feet. A lower drillhole, at least two inches greater in diameter than the diameter of the permanent well casing, shall be constructed at least five feet into solid, uncreviced, consolidated rock by under-reaming methods. Unperforated, permanent well casing shall extend to and be driven into solid, uncreviced, consolidated rock at the bottom of the under-reamed section following placement of the sealing material. The annular space between the upper oversize drillhole and the upper permanent well casing shall be filled with cement grout using Method C or bentonite. The annular space between the lower under-reamed drillhole wall and the permanent well casing, shall be completely filled with grout applied under pressure in accordance with the appropriate Method A, B, or D, in Appendix 210-3. (See Figure[s 210-5 and] 210-6.)

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

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

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 four inches greater in diameter than the nominal diameter of the permanent well casing. Watertight unperforated casing shall extend and be sealed at least five feet into the confining formation 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, and D, in Appendix 210-3 and Figure 210-1[5]), the diameter of the upper drillhole shall be at least two inches larger than the nominal diameter of the casing. To complete the well, smaller diameter casing, perforated liner, or a well screen may be installed.

(2) When artesian pressures are encountered in the absence of a confining formation, 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 formation, 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 & Appendixs referenced are available from the agency.]

690-210-0220

Plastic Casing Joints

All plastic casing joints shall be watertight. Either "bell" type, threaded, or coupling hubs are approved. Hub couplings shall be of material meeting the specifications for plastic casings as set forth in OAR 690-210-0210. Joints shall be made by solvent cement in accordance with manufacturer's directions. Newly assembled joints require careful handling until the initial set has taken place, which varies with the temperature and the pipe size. The recommended initial set times are from manufacturer's recommendations (See Table 210-4[3]).

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

690-210-0230

Inner Casing

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

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[ED. NOTE: Appendix referenced is available from the agency.]

690-210-0270

Pitless Well Adapters and Units

Surface seal requirements for well casing set forth herein shall also apply when a pitless adapter or unit is installed in a well. The seal shall cover that interval occupied by the pitless case from the point of casing connection to land surface. A cement grout seal shall not be allowed within the pitless unit or pitless adaptor sealing interval. The pitless adapter or unit sealing interval shall be sealed with unhydrated bentonite as described in OAR 690-210-0330 and 690-210-0340. The pitless adapter or unit, including the cap or cover, pitless case and other attachments, shall be designed and constructed to be watertight to prevent the entrance of contaminants into the well from surface or near-surface sources. Pitless units shall be vented to the atmosphere. Refer to OAR 690-210-0210 if the pitless adaptor or unit is to be used in conjunction with PVC casing.

NOTE: Prior to installing pitless well adapters or units on public, community, municipal, or public utility water supply wells, contact the Department of Human Resources. (See references to Health Division regulation in Appendix 210-1.)

[ED. NOTE: The Appendix referenced is available from the agency.]

690-210-0320

Methods of Placement of Cement Grout or Concrete

Cement grout or concrete used as a sealing material in a well shall be placed or forced upward from the bottom to completely fill the annular space to be grouted and shall be placed in one continuous operation without significant interruption. If temporary outer surface casing is used in the construction of the well, it shall be withdrawn as the grout or concrete is placed. (For acceptable methods of placement, see Appendix 210-3 and Figure 210-1[5], 1986.)

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

690-210-0380

Disinfection of a Well

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

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

[Text to be deleted is italicized and bracketed]
Language to be added is bolded and underlined.

[ED. NOTE: The Appendix referenced is available from the agency.]

690-210-0400

Construction of Dug Wells

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

690-210-0410

Buried Slab Construction

In a buried slab type well, the slab shall be at least 18 feet below land surface and shall be at least three inches in thickness. The slab shall be reinforced to withstand all stresses. The slab shall be sealed with cement grout at least one foot thick, and the well bore backfilled with grout [*or concrete*] in accordance with OAR 690-210-0300 through 690-210-0360[*and OAR 690-210-0430*]. (See Figure 210-13.)

690-210-0420

Surface Curbing

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

(2) If precast concrete tile or steel casing is used for the surface curbing, the well diameter to the bottom of the surface curbing shall be eight inches greater than the outside diameter of the tile or steel, and the annular space shall be completely filled with grout [*or concrete*] in accordance with OAR 690-210-0310 **through** [*and*] OAR 690-210-03**40**[15]. (See Figure 210-13[, 1986].)

APPENDIX 210-1

Additional Requirements by Other State Agencies of Oregon

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

OREGON HEALTH

AUTHORITY [*DIVISION*]

800 NE Oregon Street

Portland, OR 97232

(serving more than three single residents)

[*www.ohd.hr.state.or.us*]

<http://www.oregon.gov/OHA/Pages/index.aspx>

ORS Chapter 448 Municipal Water Supply Systems
Public Water Supply Systems
Community Water Supply Systems
Source Water Protection

BUILDING CODES AGENCY

1535 Edgewater NW

Salem, OR 97304-4635

www.cbs.state.or.us/external/bcd

ORS Chapter 446 Electrical and Plumbing for all Commercial Enterprises Mobile Home Park Water Supply Systems

OREGON PUBLIC UTILITY

COMMISSIONER

550 Capitol St NE

Salem, OR 97301-2551

www.puc.state.or.us

ORS Chapter 757 Private Owners (water supply systems, 200 homes or more)

DEPARTMENT [] OF

ENVIRONMENTAL []

QUALITY 811 SW 6th

Portland, OR 97204-1390

www.deq.state.or.us

ORS Chapter 468 Water Quality Monitoring
Underground Injection Systems
Source Water Protection

SECRETARY OF STATE CORPORATION DIVISION

Business Services Division

Public Service Bldg., Suite 180

Salem, OR 97310

www.sos.state.or.us

Business Registry for Water Districts

[*Text to be deleted is italicized and bracketed*]
Language to be added is bolded and underlined.

TABLE 210-2
(690-210-0190)
(Minimum specifications for steel well casing)

Nominal Size (inches)	Outside Diameter (inches)	Wall Thickness (inches)	Weight Per Foot (pounds)
2	2.375	.154	3. <u>65</u> [56]
2-1/2	2.875	.203	5.79
3	3.500	.216	7.58
3-1/2	4.000	.226	9.11
4	4.500	.237	10.79
5	5.563	.244	13.70
6	6.625	.250	17.02
8	8.625	.250	22.36
10	10.750	.250	28.04
*12	12.750	.312	41.45
*14	14.000	.312	45.68
*16	16.000	.312	52.27
*18	18.000	.375	70.59
*20	20.000	.375	78.60

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

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

[690-215-0015

Accessibility to Well for Reconditioning, Repair or Abandonment

To enable drilling equipment future access to the water supply well for reconditioning, repair, or abandonment, the property owner should maintain a minimum five-foot separation distance between the well and any permanent structure.]

690-215-0200

Dedicated Measuring Tube

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

1. Petes Mountain Area of Clackamas County (See OAR 690-200-0028(2));
2. Eola Hills Ground Water Limited Area of Polk and Yamhill Counties (See OAR 690-200-0028(3)[.];
- 3. "Mosier Area" Special Area Standards area of Wasco County (See OAR 690-200-0028(4)).**

690-220-0115

Unhydrated Bentonite and Method of Placement

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

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

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

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

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

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

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

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

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

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

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

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

(A) Prior Department approval is required before placement.

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

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

(5) Water supply wells with casing that is at least four inches in diameter and less than eight inches in diameter may be abandoned with unhydrated bentonite to a maximum well depth of 700 feet, if

being placed through water. Unhydrated bentonite may be used deeper with prior Department approval.

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

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

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

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

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

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

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

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

OREGON ADMINISTRATIVE RULES
 WATER RESOURCES DEPARTMENT
 CHAPTER 690 DIVISION 240
 MONITORING WELL, GEOTECHNICAL HOLE AND OTHER HOLE
 CONSTRUCTION STANDARDS

TABLE 240-1

CONSTRUCTIONS STANDARDS THAT APPLY

The Department regulates the construction of borings through which ground water may become contaminated. The type of boring (and its purpose) will determine the construction standards that apply. 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 construction standards and the Oregon Administrative Rule that apply are as follows:

- | | |
|--|---------------------------------------|
| 1. Water Supply Wells | OAR 690-200 through 690-235 |
| 2. Monitoring Wells, Geotechnical Holes
and other Holes | OAR 690-240 through 690-240-0640 |
| Other Holes | OAR 690-240-0030 |
| Geotechnical Holes | OAR 690-240-0035 through 690-240-0049 |

Type of Boring	Construction 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 (Water Sampling)	Monitoring Wells
Drive Point (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
Ground Source Heat Pump Borings (Closed Loop)	Geotechnical Holes
Ground Source Heat Pump Borings (Open Loop)	Water Supply Wells
Horizontal Drain (Slope Stability)	Geotechnical Holes
Horizontal Well (Monitoring)	Monitoring Wells
Horizontal Well (Water Supply)	Water Supply Wells

[Hydrologic Data Hole]	[Geotechnical Holes]
Inclinometer	Geotechnical Holes
Industrial Well	Water Supply Wells
Injection Well (Water)	Water Supply Wells
<u>Injection Well (Remediation) (>72 Hours)</u>	<u>Monitoring Wells</u>
<u>Injection Well (Remediation) (<72 Hours)</u>	<u>Geotechnical Holes</u>
Irrigation Well	Water Supply Wells
Monitoring Well[(>72 Hours)]	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
<u>Temporary Monitoring Well (>72 Hours)</u>	<u>Monitoring Wells</u>
Trench	Other Holes
Underground Storage Tank (Ust) Pit	Other Holes
Vapor Extraction Hole	Geotechnical Holes
Wetland Delineation Hole	Other Holes

[Text to be deleted is bracketed]

Language to be added is bolded and underlined.

690-240-0355

Monitoring Well Drilling Machines

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

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

690-240-0475

Well Seals

(2)(c) When a mixture of cement and bentonite is used as a slurry for grouting, the cement shall be American Petroleum Institute Class A or B, or ASTM C-150 Type I or II neat cement. The slurry shall be no more than five percent, by dry weight[of cement], of sodium bentonite gel powder (3.75 pounds of bentonite per sack of cement). For each pound of bentonite added, up to an additional 0.7 gallons of water shall be added to the original neat cement mix. The water and bentonite shall be mixed first, and then the cement added to the bentonite slurry. The cement-bentonite mixture shall have a mud weight of approximately 14.1 pounds per gallon;

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[(57)]**(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) *[If the piezometer 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*

[Text to be deleted is bracketed]

Language to be added is bolded and underlined.

vulnerable to damage, the] P[p]iezometers shall be protected as described in OAR 690-240-0420 **concerning monitoring wells.**[:]

[(B) If the piezometer is completed below ground 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].

(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.

[Text to be deleted is bracketed]

Language to be added is bolded and underlined.

Mosier Watershed Council

February 11, 2015

Oregon Water Resources Department
Attn: Joshua Spansail
725 Summer St. NE, Suite A
Salem, OR 97301-1266

RECEIVED BY OWRD

FEB 17 2015

SALEM, OR

Dear Mr. Spansail,

The Mosier Watershed Council has voted to endorse the Proposed Special Area Standards for the Mosier Area as described in Oregon Administrative Rule (OAR) Chapter 690 Division 200 "Mosier Special Standards."

Mosier area groundwater levels have declined 150-200 feet in the past 40 years. Many wells have gone dry or had to be deepened. This situation has caused significant expense for homeowners, orchardists, and the City of Mosier. The negative press about our well situation has already affected sales of homes both within and outside City limits.

Recognizing the significance of the problem, the Mosier area growers provided \$6895 dollars of seed funding to begin a USGS groundwater study in 2004. The Wasco County Soil and Water Conservation District (SWCD) spent \$229,615, the Mid Columbia Economic Development District invested \$20,000, the USDA Forest Service \$57,000, and the USGS matched all other funds with \$296,185. The result of this considerable investment was a groundwater model and report that demonstrates that the issue with declining aquifer levels in Mosier is almost entirely caused by poorly constructed wells that enable aquifers to commingle.

The fact of the matter is that in spite of the existing rules, Mosier Area wells have not been constructed properly and now our community is paying the price. With help from the SWCD our community is working to identify and then fix the wells that have the highest flow rates of commingling water. The SWCD is working on a project to replace a poorly constructed commingling well, with participation from a local Orchardist. This irrigation well replacement project will cost over a hundred thousand dollars.

Mosier is committed to solving our commingling well issues. Without water, our community would dry up and blow away. However, a critical piece of the puzzle is to ensure that no more commingling wells can be drilled. Thus, we have worked with OWRD staff to draft a standard that proactively requires well drillers to consult with OWRD to ensure that wells are constructed so that they are only open to a single aquifer. History has shown that our area needs such a standard to protect

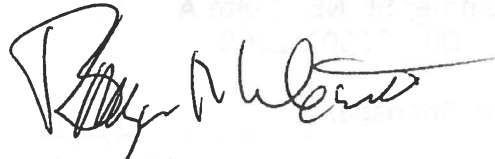
**Mosier Watershed Council, c/o Wasco County Soil and Water Conservation District,
2325 River Road, Suite 3, The Dalles OR 97058
541-296-6178 x119 www.wascoswcd.org**

Mosier Watershed Council

our groundwater. Without checks in place, the risk of more improperly constructed wells negating all of the work we are doing is too great.

Please adopt the proposed Mosier Special Standards. Thank you for your assistance.

Best Regards,



Kristen McNall
Mosier Watershed Council CoChair

Bryce Molesworth
Mosier Watershed Council CoChair

CC
Tom Byler, Director OWRD
Kristopher Byrd



Oregon

John A. Kitzhaber, MD, Governor

Water Resources Department

North Mall Office Building
725 Summer St NE, Suite A
Salem, OR 97301
Phone (503) 986-0900
Fax (503) 986-0904
www.wrd.state.or.us

January 30, 2015

Oregon Water Resources Department

Attn: Kristopher Byrd

725 Summer St NE, Suite A

Salem, OR 97301

Dear Mr. Byrd,

The members of the Oregon Water Resources Department's Groundwater Advisory Committee (GWAC) would like to indicate our support for the proposed rules regarding the "Mosier Area" special area standards in the Oregon Administrative Rules, Chapter 690, Division 200. Based on the information presented to the Committee at our January 30, 2015 meeting, the Committee unanimously approved the proposed rules as written. Please feel free to contact me if you have any questions.

Sincerely,

Garry Zollman, Chair

Ground Water Advisory

Committee (541) 276-3681



CITY OF MOSIER

small enough to make a difference

PO Box 456 | 208 Washington Street, Mosier, OR 97040
Phone: 541.478.3505 | www.CityofMosier.com

Mayor Arlene Burns
Councilor Bill Akin
Councilor Emily Reed
Councilor Jackie Sterner
Councilor Penny Wallace
City Manager Kathy Fitzpatrick
Finance Director Angie Wilson

Oregon Water Resources Department
Attn: Joshua Spansail
725 Summer St. NE, Suite A
Salem, OR 97301-1266

RECEIVED BY OWRD

MAR 09 2015

SALEM, OR

Dear Mr. Spansail,

The City of Mosier strongly endorses the Proposed Special Area Standards for the Mosier Area as described in Oregon Administrative Rule (OAR) Chapter 690 Division 200 "Mosier Special Standards."

Mosier area groundwater levels have declined 150-200 feet in the past 40 years. Many wells have gone dry or had to be deepened. This situation has caused significant expense for homeowners, orchardists, and the City of Mosier. The negative press about our well situation has already affected sales of homes both within and outside City limits.

Recognizing the significance of the problem, the Mosier area growers provided \$6895 dollars of seed funding to begin a USGS groundwater study in 2004. The Wasco County Soil and Water Conservation District (SWCD) spent \$229,615, the MidColumbia Economic Development District invested \$20,000, the USDA Forest Service \$57,000, and the USGS matched all other funds with \$296,185. The result of this considerable investment was a groundwater model and report that demonstrates that the issue with declining aquifer levels in Mosier is almost entirely caused by poorly constructed wells that enable aquifers to commingle.

The fact of the matter is that in spite of the existing rules, Mosier Area wells have not been constructed properly and now our community is paying the price. With help from the SWCD our community is working to identify and then fix the wells that have the highest flow rates of commingling water. In 2013, the City invested \$150,000 to decommission Mosier City Well #3 because it was commingling with a high flow rate. The SWCD is working on a project to replace a poorly constructed commingling well, with participation from a local Orchardist. This irrigation well replacement project will cost over a hundred thousand dollars.

Mosier is committed to solving our commingling well issues. Without water, our community would dry up and blow away. However, a critical piece of the puzzle is to ensure that no more commingling wells can be drilled. Thus, we have worked with OWRD staff to draft a standard that proactively

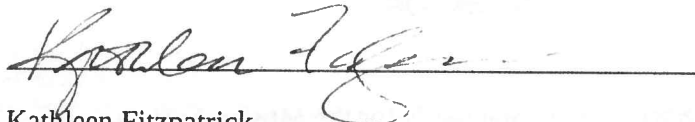
requires well drillers to consult with OWRD to ensure that wells are constructed so that they are only open to a single aquifer. History has shown that our area needs such a standard to protect our groundwater. Without checks in place, the risk of more improperly constructed wells negating all of the work we are doing is too great.

Please adopt the proposed Mosier Special Standards. Thank you for your assistance.

Sincerely,

The Mosier City Council

Letter approved unanimously at the 2/18/15 Mosier City Council Meeting



Kathleen Fitzpatrick
City Manager, City of Mosier

CC

Tom Byler, Director OWRD

Kristopher Byrd

RECEIVED BY OWRD

MAR 09 2015

SALEM, OR



Wasco County Soil & Water Conservation District

2325 River Road, Suite 3
The Dalles, OR 97058-3551

Tel: (541)296-6178 ext. 3, Fax: (541)296-7868, E-mail: wasco.swcd@oacd.org

February 4, 2015

RECEIVED BY OWRD

Oregon Water Resources Dept.
Attn: Ivan Gall
725 Summer Street NE Suite A
Salem, OR 97301

FEB 17 2015

SALEM, OR

PROPOSED RULES FOR MOSIER AREA SPECIAL AREA STANDARD FOR WELLS

Wasco County Soil and Water Conservation District (SWCD) has invested considerable resources in the Mosier Area to address the problem of decades of steady declines in groundwater aquifers in Mosier Valley in conjunction with Mosier Watershed Council (MWC). Significant investments began with the SWCD/US Geological Survey (USGS) jointly funded Evaluation of Long-Term Water-Level Declines in Basalt Aquifers near Mosier, Oregon published by USGS as Scientific Investigations Report 2012-5002 in May 2012. That report identified commingling aquifers as the principal cause of the declines.

The Mosier Aquifer Recovery Feasibility Study to look at alternatives to solve the problem was undertaken with assistance from Oregon Water Resources Dept. (WRD) and concluded that before any alternative could be successful, the commingling well issue had to be addressed.

Using inputs from both USGS and WRD the SWCD, working with MWC, contracted with GSI to systematically evaluate wells to determine if they are commingling. As a result of the 2013-2014 evaluations, one well was selected as a high priority for repair or replacement during the 2014-2015 fiscal year. That work is currently underway.

Solving the commingling problem is going to be an expensive, long-term effort. If the SWCD is to continue to support work to solve the problem, it is imperative that no new wells add to the problem. For that reason, the SWCD strongly supports the efforts of MWC working with WRD to implement special area standards for wells in the Mosier Area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mel Omeg', with a stylized flourish at the end.

Mel Omeg, Chairman

C: file c p, Mosier Watershed Council, Wasco County Commission

Rulemaking Hearing

Date: April 22, 2015

Hearings Officer: This hearing is now in session and is being tape recorded to maintain a permanent record. My name is Kris Byrd, and I am the hearings officer. Today is April 22, 2015, and the time is 5:08.

The purpose of this hearing is to provide an opportunity for public comment on proposed rules in OAR Chapter 690, Division 200, 205, 210, 215, 220, and 240 regarding well construction, focused on: special area standards for the Mosier area of Wasco County, definitions, rule clarifications, setbacks, dug wells and piezometers.

The proposed rule changes vary in scope and include:

- Establishing special area standards for the Mosier area of Wasco County.
- Clarifying responsibilities regarding certain well and geotechnical hole construction, maintenance, alteration, conversion and abandonment activities.
- Clarifying the classification of injection wells installed for remediation purposes.
- Modifying the definition of silt so the definition in Division 200 matches the definition in Division 240.
- Correcting old and incorrect rule and table references and removing dates in rule that have expired.
- Clarifying the construction standards for dug wells.
- Establishing setback standards from permanent structures for new water wells in order to allow access for drilling equipment.
- Clarifying the protection methods for piezometers.
- Clarifying the location where constructor information is placed on a drilling machine.

In addition to presenting oral comments at this hearing, anyone may submit written comments until 5 P.M. on Friday April 24, 2015, which is the close of the public comment period. Send comments to Joshua Spansail at Oregon Water Resources Department, 725 Summer Street NE, Suite A, Salem, OR 97301 or fax comments to: (503) 986-0903, Attn: Rule Coordinator or email comments to: rule-coordinator@wrp.state.or.us. I can get anyone this information if you need it since I went through it pretty quickly.

Comments received after 5 P.M., April 24, 2015, will not be reviewed or considered by the agency unless the agency decides to extend the public comment period for everyone.

The Department will not respond to questions during the hearing. After the close of the public comment period, Department personnel will prepare a staff report, which will be available from the Department.

I have one card here. If there is anyone else that would like to comment then just bring me up a comment card and we will get started. The first person is Mr. Graves.

Ron Graves: My name is Ron Graves. I'm District Manager for Wasco County Soil & Water Conservation District. I wish I had a prepared statement, but just to give you a little background. When the conservation district became aware of the groundwater problem in Mosier we were asked by the Watershed Council to assist on that and we started out working with the U.S. Geological Survey on a jointly funded scientific investigation of the basalt aquifers here. So far what we needed to do, we concluded, we needed to really understand the nature of the problem. What was the cause of the problem of decades long aquifer declines were because we knew that it was a good investment because we knew that the fix was going to be a lot more expensive and we are relearning that as we go along, but following the USGS study which showed that the reason for the declines in the aquifers were commingling wells that penetrated more than one aquifer we had an opportunity to get a grant from the Oregon Water Resources Department for aquifer storage and recovery feasibility so we contracted with a firm that looked at that and the conclusion was that these would be good things to do, but not until you fix the well problems. Well that's where we are at right now and the district, we are fiscally pretty conservative. We have a local tax base and that is what really enabled us to partner with USGS for the study. We had a little money available through our local tax base. So far our total investment we've made, counting \$142,000 we got from the Water Resources Department for the storage and recovery feasibility study, we have invested \$842,000 in this area for the groundwater issue. We are apparently exploring other sources to help fix the problem, but more because of costs involved we are really concerned that if we went ahead and started doing repairs to solve the problem new people come here and drill wells and so we don't want more people adding to the problem so we are very pleased that the Watershed Council has gone forward with seeking help on getting a little bit higher standards for this area and the district is in full support of that effort.

Hearings Officer: Thank you. Are there any other comments?

Rod Runyon: Rod Runyon, Commissioner Wasco County, 511 Washington Street, Wasco County Courthouse, The Dalles, Oregon, 97058. I did not come to speak I came to listen, but since we don't have a lot of talkers yet maybe I will inspire a couple of the locals here to talk. I have sat through a number of these meetings. It's great to make a bunch of new rules going forward and so forth but my concern also is the problems that we have from the past and as Ron pointed out a lot of money has been spent, a lot of time and effort, and we need some help and I'm not just a county commissioner I'm also the Governor's appointee to the Regional Solutions Team and I take that very seriously and we need some help out here. We need some on the ground help and hopefully some funds to take care of some of the older problems that are still here and are still going to continue to cause problems no matter what we do with new rules for future wells. Anyway, we are glad you are here. We are all a bunch of nice people and we want to get the job done. That's all I got.

Hearings Officer: Thank you.

[Recording shut off]

[Recording turned on]

Hearings Officer: We are back on the record. I have called the names of everyone who submitted registration cards. Is there anyone else who wants to comment?

Thank you for coming and providing us with your comments. The hearing is adjourned.

[Recording shut off]