



Well Construction in Oregon: Challenges and Opportunities

Well Construction in Oregon

There are more than 230,000 wells in Oregon, with approximately 3,000 new wells drilled each year on average. These wells provide a variety of benefits, from domestic drinking water to water for irrigation, cities, nurseries, industry, and other uses. The Water Resources Department is responsible for helping protect these uses and the people, economies, and communities that rely on aquifers to meet their water needs. The Department's Well Construction Program seeks to ensure that well constructors and landowners use proper well construction, maintenance, and abandonment techniques to protect aquifers. To accomplish this, the program administers well construction standards, conducts well inspections, administers well constructor continuing education and licensing, records exempt use wells, and reviews requests for special standards.

Well Construction Program Challenges

In 1989, the Legislature adopted a fee to fund a well construction and inspection program. Almost from the beginning, however, funding has fallen short and the well inspection program has not been fully staffed. The program has typically had funding for 4-6 well inspectors, which is not adequate to oversee the construction of all new wells and address issues posed by old wells. As a result, legacy issues for older wells are addressed on a complaint driven basis, or as well owners seek other approvals from the Department such as new water rights. For new wells, the Department typically only has resources to inspect around 30 percent, which means that deficiencies on uninspected wells are left unaddressed. Last year, of the 948 wells inspected, approximately 12 percent were found to have deficiencies or construction problems.

Issues Resulting from Improper Well Construction

In many areas of the state, aquifers are a shared resource. This means that a well can have impacts on the aquifer, which can negatively impact other wells and users that rely on that aquifer, in some cases threatening public health and safety. A few real examples of how improper well construction can contribute to groundwater problems are included below.

Improperly constructed wells can contribute to groundwater contamination, impacting people that rely on well-water for drinking. In one example, a well was constructed on the property of a gas station and was not properly sealed. The well appeared to serve as a conduit for water contaminated with gasoline to leak into lower aquifers. The contamination spread and affected domestic wells in the community near the gas station. Similarly, in another part of the state, a well was drilled and not sealed deep enough. Eventually, a neighboring city found their well water had been contaminated by a chemical. After investigation, it was believed that the improperly constructed well may have allowed contaminants to move into the aquifer that was the source of water for the city. The city had to abandon the well as a water supply source. Other common violations that can contribute to contamination include constructing a well too close to a septic system or drainfield, and cutting off the casing of a well, which can allow surface contamination to enter the well.

Improperly constructed wells can also lead to groundwater level declines, loss of pressure, and waste. Large portions of the state are underlain by rocks called basalt, which can pose challenging conditions for drilling and properly constructing a well. For example, in the Mosier area, improperly constructed wells have interconnected separate aquifers and, along with pumping, have contributed to groundwater level declines of more than 150 feet. The area has experienced locally dry wells, jeopardizing water supplies for homes and the community. As a result, the Department has established special well construction standards for the area, and the Oregon Legislature has invested \$1 million into fixing or replacing some of the wells.

Need for Improvements to the Well Construction Program

The Department is interested in improving the well construction program to better protect the resource for those that rely on it for their current and future water supply. The need for improvements is outlined in the 2016 Secretary of State Audit, the *2017 Integrated Water Resources Strategy*, and the Department's *2019-2024 Strategic Plan*. Without further investments in the program and policy changes, the Department is unable to ensure that wells are constructed properly. This means that improperly constructed wells, and their contributions to groundwater level declines and local groundwater contamination of aquifers, are likely to continue to be a challenge into the future.

The Well Construction Program has a solid foundation; however, there are several areas in which further policy and resource improvements are necessary in order to protect the resource, well owners, and others. These improvements could include:

- *Increasing the number of wells inspected:* Throughout the trades, work on electrical, plumbing, septic, and building construction requires an inspection before customers are allowed to occupy or use these systems. This is for the protection of both the consumer and public. Currently, wells used for drinking water, livestock, irrigation, and other purposes, do not have a requirement for inspection before use. Inspections are important for identifying deficiencies in construction, yet the Department only has resources to inspect around 30 percent of new wells.
- *Increasing the capacity of the Department to be onsite during well construction and inspecting placement of the seal:* Inspections are most valuable when the inspection is conducted during well seal placement. Proper placement of the seal is important for preventing commingling and contamination. A thorough inspection at the time of placement of the seal can help to identify deficiencies in well construction.
- *Notice of seal placement:* As it is now, with the exception of the special standards for the Mosier Area, the Department receives start cards (notice of intent to construct a well) the day of, or in some cases months before a well is drilled, without information on the date drilling or seal placement begins. This makes it difficult for well inspectors to know when a well is being worked on. Other states require 72 hours of notice, and in the Mosier Area, the Department requires 10 days of notice.
- *Reviewing well logs for technical information:* While the Department reviews all well logs (the record of the water and geologic material encountered during drilling and the well as built) for completeness, it only has the staff capacity to provide a technical review for about 10 percent of new wells. The ability to provide a technical review of all incoming well logs would help the Department identify many of the deficiencies in well construction.
- *Improve well driller knowledge:* Improve well construction through additional training requirements, more robust licensing requirements, required continuing education, and feedback during inspections.
- *Providing funding to incentivize and assist with fixing legacy well construction issues:* Many deficient wells were constructed prior to modern well construction standards, and well owners whose wells are functioning properly may not see the value in repairing or replacing a well that is deficient. Funding to assist well owners with addressing well construction deficiencies, similar to the funding provided in the Mosier area, could help to reduce the burden on well owners.
- *Increasing the installation of measuring tubes:* Measuring tubes allow the Department to more easily take water-level measurements to monitor groundwater levels. This data is essential for groundwater studies and understanding the availability of water.



March 11, 2019

MEMORANDUM

TO: Senator Kathleen Taylor, Co-Chair and
Representative Jeff Reardon, Co-Chair
Joint Ways and Means Subcommittee on Natural Resources

C: Matt Stayner, Legislative Analyst
Legislative Fiscal Office

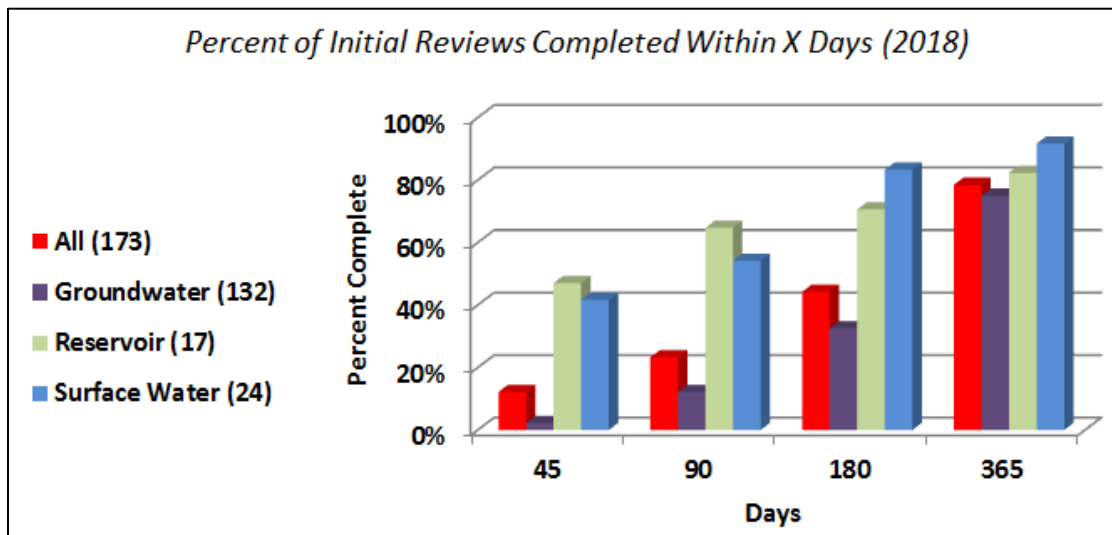
FROM: Thomas M. Byler, Director

SUBJECT: Responses to questions asked during the hearing on House Bill 5043

Below are responses to questions asked during the Department's budget hearing last week.

- 1. In regards to Key Performance Measure #10, questions were asked regarding the number of days it would take to issue an initial review on 55 percent of the water right permit applications filed under our current processing. In addition, a question was asked about our average time to process water rights.**

In 2018, the Department completed 24 initial reviews for surface water applications, 17 initial reviews for reservoir applications, and 132 for groundwater applications. In total, the Department issued 173 initial reviews in 2018. The Department has included a chart below that shows the percent of initial reviews completed in 2018 within 45, 90, 180, and 365 days for surface water, groundwater, and reservoir applications, as well as for all applications combined.



For all applications in 2018, an average of 227 days were required for the Department to issue initial reviews on 55 percent of the applications. As discussed during the hearing, initial reviews are taking longer for groundwater applications. For example, an initial review was completed on 55 percent of the surface water and reservoir applications within 65 days in 2018. However, an initial review on 55 percent of groundwater applications required 260 days.

A number of factors contribute to the longer processing time for groundwater applications. First, initial reviews for groundwater applications are labor-intensive. Technical reviews are conducted by hydrogeologists in our Groundwater Section, who look at a number of factors including: the potential for interference with nearby surface water sources and whether groundwater is available at the well(s) location. These reviews take time to complete because the hydrogeologist must research the local geology and hydrogeology, well construction details, and water level trends in the area.

Second, workload challenges for our Groundwater Section are significant and growing. The Groundwater Section has been challenged to maintain work on initial reviews while also addressing: (1) staff turnover from retirements and promotions; (2) steep learning curves for newer staff; (3) extensive involvement in legal challenges, particularly as a result of regulation in the Klamath Basin; (4) the increasing complexity of application reviews, including evaluation of mitigation proposals; and (5) special projects including the Mosier Well Repair Program, the Harney Basin Study, the Umatilla Basalt Stabilization workgroup, and efforts in the Walla Walla Subbasin. In addition, there has been an increase in groundwater applications in certain parts of the state related to cannabis.

It is important to note that initial reviews are just one step in the water right permit application process. The general steps include: (1) completeness determination, (2) initial review, (3) public notice, (4) proposed final order, (5) public notice and opportunity to protest, (6) hearing, if protested, and (7) final order and permit.

2. What are the water right criteria and are we using the right criteria?

The procedures used by the Department in evaluating water right permit applications are described in Oregon Revised Statute (ORS) Chapter 537 and Oregon Administrative Rules (OAR) 690-310. This is a high-level, general summary of criteria and procedures that are generally applicable to applications for a permit to use surface water or groundwater. Given the complexity of water right applications, the Department's response is intended to provide a general overview with information on applicable rules that provide additional information. In general, the Department believes that the statutes provide adequate authority and direction to consider water right permit applications. If there are questions or an interest in more information, please do not hesitate to contact us.

In reviewing permit applications under ORS 537.130 to 537.220 and ORS 537.615 to 537.635, the Department considers the following criteria:

- Compliance with applicable basin program or provisions [*OAR 690-500 to 690-520*], any applicable interstate compacts [*ORS Chapter 542*], and statewide administrative rules [*ORS 536.300 & OAR 690-410*]

- Compliance with statewide planning goals [OAR 690-005-0030]
- Compliance with acknowledged land use comprehensive plans [OAR 690-005-0035]
- Water availability [OAR 690-310-080 & OAR 690-310-150]
- Completeness of application [OAR 690-310-070]
- Impairment or detriment to the public interest with regard to sensitive, threatened, or endangered fish species [OAR 690-033]
- Injury to existing water rights of record [OAR-690-310-150]
- Compliance with Scenic Waterway requirements [ORS 390.835]
- Public interest standards [ORS 537.153]
- For ground water permit applications: Potential for substantial interference with surface water [OAR 690-09]
- For ground water permit applications: Consistency of the proposed well with minimum well construction standards [OAR 690-200]
- For ground water permit applications: Consistency with designations of critical groundwater areas [ORS 537.735]

3. Does the water rights system prioritize high-value crops over those that are less valuable?

No, in most instances, the law does not prioritize certain water uses over others, and it does not distinguish between different types of crops. The prior appropriation system is based on the priority date of the water right, meaning those with older water rights have priority over those with newer rights, regardless of the type of crop. However, the transfers process, which allows a water user to legally change the place the water is used, the purpose for which it is used, or point of diversion can provide a tool for water users to transfer water rights to uses that provide a greater value. Water markets in conjunction with transfers may become an important tool in the future to accommodate new uses.

4. Please provide some assurance that wells and dams at this point going forward are being built correctly.

Dam safety: The Department reviews the construction designs and plans for dams regulated by the State. The Dam Safety Program is also responsible for inspecting over 75 high hazard dams, 149 significant hazard dams, and 729 low hazard dams, as well as evaluating these dams to determine if their hazard rating is correct as conditions change. The Department has recognized a need to ensure that the Department has clear authority to ensure that modifications to dams that can affect the safety of the structure are reviewed by the Department, similar to new construction. In addition, the Department has noted that other states charge a fee to review the designs and specifications of proposed new dams or modifications. To address these and other issues, the Department has introduced HB 2085, which recently had a hearing in the House Committee on Natural Resources. The Department's presentation, testimony, and other materials providing further information on the bill are included on [OLIS](#).

Well construction: The Department does not currently have the authority or resources to ensure that wells are being constructed correctly. Currently, the Department only inspects, on average, 25-30 percent of the approximately 3,000 newly constructed water wells each year. A handout on well construction challenges and improvements is attached.

5. Please provide a copy of the groundwater basin study framework that was requested by Representative Helm and discussed with the House Energy and Environment Committee.

Below are links to the materials requested, which were provided as part of the discussion on House Bill 2856:

- [Summary](#) of information provided.
- [Background](#) Information on Groundwater Basin Studies.
- A [Systems Approach](#) to Expediting Groundwater Basin Studies.

6. Please provide your schedule of fees and the history of fee increases.

A fee schedule, which identifies most of the Department's fees, can be [downloaded here](#). Fees that are not included in the linked document are the Department's hydroelectric fees related to the administration of ORS 543 and ORS 543A, which are discussed further below.

Most fees are specified in statute, with the majority of fees identified in ORS 536.050. With the exception of the annual dam safety fee, well driller licensing fees, and certain hydroelectric fees, the Department's fees are one-time fees associated with a particular activity (e.g., application for a water right or other transaction, drilling of a new well, etc.).

Generally, fees associated with processing the various water right transactions, such as new water right applications, certificates, extensions, and transfers are on a four-year fee schedule. These fees, along with dam safety fees, were last increased in 2017. Other fees were last increased as follows:

- Well constructor licensing and renewal: 2007
- Well constructor exam: 1981
- Exempt use recording fee: 2009
- Start card fee: 2009
- Geotechnical hole fee: 2009
- Application for a landowner permit to drill their own well: 2017
- Limited license fees and road registrations: 2015
- See hydroelectric fee discussion below.

The current fees for new hydroelectric applications were set in 1991 (ORS 543.280). Fees for hydroelectric use when added to an existing water right were established in 2007 (ORS 543.765). Fees to relicense a hydroelectric project are based on the cost of the application review as provided in ORS 543A.405 and are subject to appeal under ORS 543A.410.

Hydroelectric projects are assessed annual fees that also support hydroelectric programs at the Oregon Department of Fish and Wildlife and Oregon Department of Environmental Quality. For

projects that have not yet been relicensed, the fees were fixed in 1999 in ORS 543A.415 (also see ORS 543.300(5) and ORS 543.710). For projects that have been relicensed, fees are set out in ORS 543.078 in 1998 dollars. ORS 543.085 provides for a periodic review of the annual fees on relicensed projects, at least every 8 years by a specified panel of interested stakeholders (last panel appointed in 2017).