IDAHO DEPARTMENT OF WATER RESOURCES

Frequently Asked Questions (FAQs) about Idaho's Groundwater Resources

Aquifer/Groundwater Monitoring and Management

1. Who monitors aquifer conditions (quantity and quality) in the state of Idaho?

In Idaho, the Idaho Department of Water Resources (IDWR) and the Idaho Department of Environmental Quality (IDEQ) share responsibility for monitoring Idaho's groundwater resources.

IDWR monitors water levels in more than 1,200 wells annually, primarily in areas of interest and concern throughout the state. Additionally, IDWR has installed data loggers in over 500 wells to obtain continuous water level records throughout the state. IDWR maintains water level monitoring sites in 40 of Idaho's 44 counties.

IDWR monitors water quality in approximately 250 wells annually, maintains an inventory of 1,500 active wells, and has measured water quality in more than 2,200 wells since 1990. IDWR conducts water quality monitoring in all 44 Idaho counties. IDEQ performs local monitoring at approximately 300 wells annually and regulates Idaho's Ground Water Quality Rules (IDAPA 58.01.11).

Additionally, the Idaho Water Resource Board (IWRB) monitors water levels and water quality in 55 wells for 10 groundwater recharge sites across the Eastern Snake Plain Aquifer (ESPA) region.

2. Can IDWR measure the water level in my well or collect a water quality sample?

As mentioned above, IDWR currently maintains a monitoring network of more than 1,200 water level wells and 1,500 water quality wells. We first recommend looking at wells monitored in your area on IDWR's groundwater data portal available online here. Any nearby wells that IDWR monitors should generally represent conditions at your well unless it is drilled into a different aquifer.

While there may be opportunities to add wells to the various IDWR monitoring networks from time to time, IDWR has defined policies, budgets, and staffing that limit the ability to respond to every request. IDWR recommends searching online for a local hydrologic consultant, well driller, pump company, or water quality laboratory to assist with groundwater issues such as well problems, water level measurement, or water quality sampling. Additionally, when a new well is drilled or a pump is pulled for maintenance, consider installing a 1" PVC sounding tube to facilitate any water level monitoring equipment being inserted into the well.

3. Are IDWR aquifer monitoring programs expanding in response to increased population growth and development?

Yes, IDWR adds new wells to our existing groundwater monitoring network on an annual basis to assist with administration in local areas of concern, IWRB projects, groundwater modeling efforts, and general tracking of aquifer health.

4. Is it possible to determine the amount of groundwater use that an aquifer can sustain? Can the state forecast changes to aquifer conditions in response to changes in climate and land use?

At the simplest level, groundwater hydrographs (graphs of water levels in wells) provide the State with data to evaluate changes in aquifer conditions over time. When discharge in an area exceeds recharge, water levels decline.

Groundwater budgets can be developed for an aquifer system by quantifying inflows to the system (recharge) and outflows from the system (discharge). The difference between inflows and outflows equals the change in storage of the aquifer. As stated above, when discharge exceeds recharge, the aquifer storage and groundwater budget become negative, and regional groundwater levels decline.

Groundwater models are developed using all the information that is known about an aquifer system such as recharge, discharge, water levels, precipitation, streamflow, and water use to develop a relationship between how much water is being used and the impact those uses have on the aquifer and streams. The models are often used to estimate how future uses of groundwater may impact the same aquifer and streams. Groundwater models are constructed for select basins and require a large expenditure of funds and staff resources for initial development and ongoing maintenance.

The State has developed numerical groundwater flow models for several aquifer systems including the ESPA, Treasure Valley, and Big Wood River Basin. These models are available to the public and can be used by groundwater modelers in conjunction with climate change or land use forecasts to evaluate potential changes in aquifer conditions. In collaboration with the USGS, the State began development of a Big Lost River Basin groundwater model in November 2022 and anticipates completion in three years.

5. What responsibilities do local government entities have in managing groundwater resources and responding to groundwater shortages?

Counties are responsible for approving new subdivisions. Local authorities may require the installation of community wells instead of individual domestic wells, depending on local ordinances and conditional use permitting processes. Community wells are typically drilled to a greater depth, are better constructed, and tested regularly (see Pros and Cons of Community Wells below). Although expensive, counties can potentially work with cities or water purveyors to extend service areas and water mainlines to new subdivisions to connect with existing city water services, eliminating the need to drill new or additional wells in a sensitive resource.

6. What responsibilities does IDWR have in managing groundwater resources and responding to groundwater shortages?

IDWR is responsible for managing and allocating the state's water resources, including groundwater resources. This is accomplished through many programs and activities, including but not limited to:

- managing processes for water appropriation and administration of water rights;
- monitoring groundwater levels throughout the state;
- measuring groundwater use in designated areas of the state where groundwater supply is limited or managed conjunctively with surface water supplies;
- regulating groundwater use and conducting enforcement of groundwater rights;

- designating Critical Ground Water Areas or Ground Water Management Areas, and developing management plans within such areas;
- limiting or restricting appropriation of new water uses by issuing water right moratorium orders;
- facilitating groundwater recharge projects; and
- developing quantitative models to assess the hydrologic impact from water diversions and to predict future water supplies.

7. What is a Critical Ground Water Area?

Under Idaho Code § 42-233a, the Director of IDWR is granted authority to designate Critical Ground Water Areas (CGWAs) in Idaho. A Critical Ground Water Area is all or part of a groundwater basin that does not have sufficient groundwater to provide a reasonably-safe supply for irrigation or other uses at the projected rates of withdrawal. The IDWR Director can deny an application for a proposed use if the point of diversion lies within the designated CGWA. For more information, go to: IDWR Critical Ground Water Areas.

8. What is a Ground Water Management Area?

Under Idaho Code § 42-233b, the Director of IDWR is granted authority to designate a Ground Water Management Area (GWMA). A Ground Water Management Area is all or part of a groundwater basin that may be approaching the conditions of a Critical Ground Water Area. Applications for new water appropriations may be approved only after it is determined that sufficient supply is available and other prior water rights will not be injured. The Director may require reporting of water users in a GWMA. For more information, go to IDWR Ground Water Management Areas.

9. What is an Area of Drilling Concern?

Areas of Drilling Concern are designated by the IDWR Director in response to known occurrences of waste or contamination of the state's water resources and are established to protect public health and the state's water resources. Currently, there are two Areas of Drilling Concern in the state of Idaho – Bunker Hill area in Kellogg and West Boise. Anyone drilling a new well or deepening/modifying an existing well for any purpose in an Area of Drilling Concern must comply with additional requirements. For more information, go to IDWR Areas of Drilling Concern.

10. Does anyone have the authority to issue a moratorium on new groundwater development? What about new exempt (I.C. § 42-111) domestic well development?

The Director of IDWR, acting on behalf of the State of Idaho, has the statutory authority to control the appropriation and use of all surface and ground waters within the state. Idaho Code § 42-1805(7) authorizes the Director to suspend the issuance or further action on applications to appropriate water as necessary to protect existing water rights.

However, the Director currently lacks the explicit authority to restrict the appropriation of groundwater by the drilling of individual domestic wells. Idaho Code § 42-227 exempts the drilling of wells for domestic purposes, as defined in Idaho Code § 42-111(1), from "the permit requirement under section 42-229, Idaho Code." Idaho Code § 42-229 prescribes "the application permit and license procedure" as the method of appropriating groundwater.

Idaho Code § 42-1805 grants the Director limited authority to prohibit appropriation of water. The Director is only authorized to "suspend the issuance or further action on permits or applications…" Because the drilling of wells for domestic purposes is exempt from the application permit and licensing procedures, the Director does not have the explicit authority to issue a moratorium order that prohibits appropriation of water for qualifying exempt domestic ground water uses under Idaho Code § 42-111(1).

11. **What are the pros and cons of a subdivision with one or several community wells versus many, individual, private domestic wells?**

Pros – A community well is generally designed, drilled, and constructed to higher standards than an individual domestic well. A professional engineer or hydrologic consultant is typically involved in the design and installation of a community well. This generally results in a deeper well with a higher production rate and longer projected life.

Drilling a community well reduces potential well-to-well impacts that can occur in an area with many closely spaced domestic wells all pumping from the same production zone. An abundance of closely spaced wells can connect cones of depression and exacerbate water level declines in an area.

Contaminants that are present in groundwater, such as nitrate and arsenic, can also be present in well water. A community well is classified as a public drinking water well by IDEQ and is required to be sampled, tested, and treated for water quality contaminants based on the Safe Drinking Water Act. Private domestic wells do not have testing or treatment requirements. Individual well owners are responsible for the safety of their own water. Poorly constructed or degraded domestic wells can also potentially lead to the commingling of aquifers and the introduction of contaminants from shallower to deeper zones.

Cons – The cost to install and maintain a community well is significantly higher than a private domestic well due to design and consulting costs, costs related to increased construction standards, depths drilled to achieve a long-term sustainable supply, pump design and maintenance, and annual testing requirements. These costs are typically doubled as community systems must have a minimum of two wells (at least one well for backup).

Well Construction

1. **Who is responsible for permitting the construction of a new well or the modification of an existing well?**

IDWR administers the construction of wells in Idaho, which includes licensing well drillers and issuing permits for the construction, modification, or decommissioning of wells. All wells must be constructed by a licensed well driller. For more information, go to: https://idwr.idaho.gov/wells/

2. **What is the difference between a private domestic well, a community well, and an irrigation well? Do they all adhere to the same construction standards?**

The difference between the types of wells is based on the proposed use when the well is drilled. A well can have multiple uses and the designated use can change throughout the life of a well. All wells must

adhere to the IDWR well construction standards, and community wells must adhere to additional rules from IDEQ to protect water quality and public health.

3. What is the "start card" process?

The start card process is effectively an expedited (pre-approved) permit process for the construction or modification of single family residential domestic wells. To qualify, wells must be used for domestic purposes as defined in Idaho Code § 42-111(1)(a). Well drillers are required to submit start cards at least two (2) hours prior to starting construction or modification of the residential domestic well. Note that start cards are not valid in certain areas identified by IDWR, such as Areas of Drilling Concern, Critical Ground Water Areas, Ground Water Management Areas, and Areas of Ground Water Concern.

4. Does IDWR have well "testing and quality standards"?

IDWR does not have water quality testing requirements. IDEQ administers Idaho's Ground Water Quality Rule (IDAPA 58.01.11). A community well is considered a public (drinking) water system by IDEQ and is required to be sampled, tested, and treated for water quality contaminants based on the Safe Drinking Water Act. Individual domestic wells do not have testing or treatment requirements. Individual (private) well owners are responsible for the safety of their own water.

5. What is the difference between a well and a water right?

In Idaho, a well is defined as an artificial excavation in the ground more than eighteen (18) feet in vertical depth below land surface. A water right authorizes the use of public water by private individuals and organizations.

6. Do I need a water right for a domestic well?

No, a water right currently is not required for a domestic well as long as the use meets the domestic or de-minimis exemption criteria described in Idaho Code § 42-111. Idaho Code § 42-227 exempts the drilling of wells for domestic and other de-minimis purposes, as defined in Idaho Code § 42-111, from the water right permit requirement under section 42-229, Idaho Code. However, a well owner is not prohibited from obtaining a water right for domestic or de-minimis uses defined in Idaho Code § 42-111.

7. What does IDWR consider and evaluate when permitting the construction or modification of a well?

IDWR considers the Well Construction Standards Rules (IDAPA 37.03.09) when evaluating Applications for Drilling Permits. These rules establish minimum standards for the construction of all new wells and the modification and decommissioning (abandonment) of existing wells. The intent of the Rule is to protect groundwater resources of the state against waste and contamination.

8. **What steps should I take to ensure I'm installing a quality well?**

   Getting the advice of a local well driller who is licensed and bonded in the State of Idaho can help with installing a quality well. Having discussions with the well driller ahead of time and asking for recommendations on how best to construct a productive well with long-term reliability in mind will also help.

9. **What kinds of water wells are allowed in the state of Idaho?**

   Examples of permittable wells include all water wells, monitoring wells, low temperature geothermal wells, geothermal wells, injection wells, and other artificial openings and excavations in the ground greater than 18 vertical feet below land surface.

10. **Do I need advance permission before drilling a well?**

    A well drilling permit is always required prior to drilling a well in Idaho. Additionally, in some cases, a water right (or permit) authorizing diversion of groundwater is also required. Water rights (or permits) are not required for residential domestic wells, monitoring wells, or cathodic-protection wells. However, other wells such as irrigation, commercial/industrial, multi-family, or municipal wells require a water right (or permit) before a drilling permit can be issued.

11. **What are the responsibilities of a private well owner?**

    Private well owners are responsible for drilling, installing, and maintaining their well, and ensuring an adequate water supply. Private well owners are also responsible for the safety of their own water. There are a number of harmful contaminants that can be present in groundwater; examples include nitrate and arsenic. Private well owners are strongly encouraged to have their well water tested on a periodic basis.

Impacts to Residential Well Yields

1. **What are the reasons why a residential domestic well can go dry?**

   Domestic wells typically pump from shallow groundwater aquifers, often 75 feet or less below the earth's surface. There are several reasons why a domestic well may go dry:

   a. **Well construction** – wells have a limited lifespan and may be structurally worn out due to age, with degraded casing and screen, or experience caving of the surrounding geologic material due to poor well construction. Existing, aging wells typically will not produce as much water as they once did if poorly constructed or not properly maintained.

   b. **Pumping issues** – an improperly sized or malfunctioning pump can cause problems. Additionally, heavy pumping from a domestic well to irrigate lawns instead of using nearby surface water may quickly deplete the shallow groundwater system.

   c. **Completion depth** - an old well may have been originally drilled too shallow in the aquifer to account for the long-term water level trend in the completion zone. This may require a deepening of the existing well or the construction of a new, deeper well. Installing a well as deep as can

reasonably be afforded may prove more expensive upfront, but may be worth the investment in the long run. For example, a properly constructed and maintained well with 25 feet of water above the pump in an aquifer that experiences 0.5 ft/year decline should last approximately 50 years if all things stay the same. Getting the advice of local well drillers, pump installers, and hydrologic consultants can help in properly designing a well and determining a long-term depth for your area and budget.

d. **Hydrogeologic conditions** - shallow aquifers are subject to short- and long-term variations in land use changes, surface water distribution and seepage, snowpack, weather, rainfall, and drought. New demands and climatic changes can change the rate of water level decline in the future.

We suggest calling a professional well driller or pump company to come out and check if there is a problem.

2. How can I find out more information about the status of the shallow aquifer that my well taps into?

IDWR tracks groundwater levels in Idaho's local and regional aquifers. Aquifer water levels are available online at IDWR's groundwater data portal here: https://idwr-groundwater-data.idaho.gov/

3. Do geology and topography limit the yield of domestic and community wells?

Hydrogeologic conditions govern how productive an aquifer can be (its potential). However, the design and construction of a well impacts how efficiently and reliably groundwater can be extracted from the aquifer. Community wells and corresponding pumping systems are designed by licensed professional engineers, as a result, they are generally more efficient and reliable than standard domestic residential wells.

4. What is the distance of impact from a pumping well?

Depending on the hydrogeologic conditions of the aquifer and pumping rate of the well, drawdown can propagate (called the cone of depression) from feet to miles.

Local Areas of Concern

What do we know about groundwater concerns in Southwest Boise?

1. Groundwater hydrographs derived from IDWR monitoring well data show there is a long-term, downward trend in the shallow aquifer in SW Boise, with an average decline of 0.4 to 0.8 feet per year.
2. SW Boise shallow aquifers receive less natural recharge than some other areas in the valley. Additionally, when land is converted from irrigated farmland to subdivisions, the irrigation water that historically seeped into the soil and recharged the aquifer no longer exists.
3. IDWR continues monitoring the minor declines in the shallow aquifer and water levels throughout the Treasure Valley; additional research is needed to definitively determine any causes. Water levels are available online.

4. A water demand study was conducted by the Idaho Water Resource Board in 2016 that examines future growth and water supply in the Treasure Valley over a 50-year time span (2015-2065). This report can be found on IDWR's website.

5. IDWR has developed a groundwater model of the Treasure Valley in conjunction with the USGS. The model will help answer questions related to water administration, planning, and recharge. The model was released in January 2023 and is available online here.