

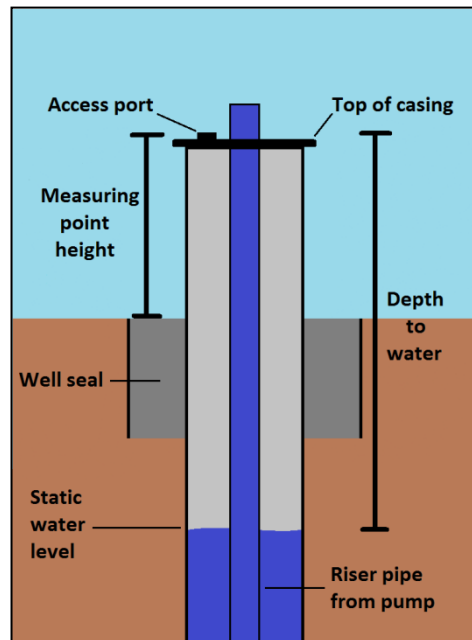
How to properly collect & document water level data from your well

This document is intended for staff and technicians of small Group A and Group B water systems who are required to measure and report water levels in their source well(s) as a condition of their water right permit.

Keeping accurate records of the water levels in your well is not just a legal requirement, it is a good management practice for your water supply and provides numerous benefits (see Documentation section on next page). By following a few easy steps and documenting the appropriate observations, you can ensure that the data you submit to the Department of Ecology (Ecology) will be of good quality and can be used to help protect your water resources.

What you will need

- Pencil
- Record sheet or notebook
- Clock
- Water level meter
- Wrench
- Spray bottle with 20:1 water and bleach solution
- 5 gallon bucket
- Paper towels
- Rubber gloves



Cross section of well

Before you begin

The aquifer needs to be under static conditions to get an accurate water level reading. This means that measuring a water level when your well is pumping or in the recovery period immediately after pumping will not yield the most useful data.

DEFINITIONS

(Refer to cross section figure at left.)

Depth to Water: The distance from the measuring point to the water surface inside the well casing.

Measuring Point: The point from which the depth to water in the well is measured.

Static Water Level: The water level in a well that is not under the influence of withdrawals from the aquifer.

Sounding Tube: A dedicated pipe hung from the well head top plate used to insert a water level meter and measure water levels.

Top of Casing: The main well casing that sticks up out of the ground.

Water Level Meter: A measuring tape with internal electrical wire(s) that detects the water surface within a well.

For more information

Contact your closest Ecology regional office:
<http://www.ecy.wa.gov/org.html>

Special accommodations:

To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

In an ideal situation, a water level is collected when the water level in the well has recovered fully, or at least a couple hours after pumping has stopped if water level recovery is slow in your well. Sometimes this is not possible, and a qualifier remark can be added when you document the water level measurement.

Be sure to disinfect all equipment that is inserted into the well to protect against contamination. This can be done by spraying down the water level meter tape with a 20:1 water to bleach solution before using it to measure the water level. Let it sit for about 10 minutes on a clean surface before using it. It is a good time to open up the access port to the well head or sounding tube as you wait for the water level meter to dry.

*Note: If you are taking a water level measurement for **the first time**, there is one very important piece of information that you need to collect. This is the height of the measuring point measured from land surface (refer to “Cross section of well” diagram on previous page). This distance only needs to be measured once unless the measuring point changes due to modifications of the well head.*

Documentation: why it’s worth going through all this trouble for water levels

It is recommended that you use a computer to create and print out a record sheet so you will have clean and clear documentation of water level measurements. Keeping accurate records of water levels is a good management practice for your water supply and provides numerous benefits.

- The first and foremost benefit of closely monitoring your well is that problems with the well or the aquifer can be detected *before* serious issues arise.
- Actively monitoring water levels gives you perspective on how water levels in the aquifer respond to climate cycles, such as regional rainfall patterns.
- Finally, well-maintained water level records combined with water metering totals will provide tangible evidence of water level declines in the aquifer, if such a situation arises. These records could play a vital role in establishing whether your water rights have been impaired.

You will need to record the following items each time you measure water level:

- Date
- Time
- Your name
- Depth to water
- Measuring point name (e.g. top of casing or top of access port)
- Measuring point height
- Water level qualifier (i.e. static, rising or falling)
- Time since pump was shut off
- Any other pertinent information about the well.

You are encouraged to submit your water level data directly to Ecology. This is easy to do, using the on-line [EIM Groundwater Data Center](#) (EIM=Environmental Information Management system). The webpage provides data submittal spreadsheet templates, and tutorials on how to complete and submit spreadsheets. Region-wide groundwater data provides invaluable information for Ecology to protect and manage this resource.

Taking a water level measurement

1. Begin by turning on the water level meter, turning the sensitivity adjuster to high and dipping the sensor probe in a bucket filled with a few inches of water. This will check to make sure that the batteries are in good order and that there are no electrical shorts in the leads connected to the sensor probe.
2. Next, slowly lower the water level meter probe down the sounding tube. Use your hand as a guide (or well casing if no sounding tube is installed) while being careful not to let the tape rub against sharp metal edges. When the probe makes contact with the water surface it will turn on an indicator light, buzz, or do both depending on the model of water level meter and the settings.
3. Set the water level meter on the ground and unspool enough tape to re-establish contact of the probe with the water surface. Pinch the tape at the measuring point and dip the tape up and down numerous times to establish if your pinch point on the tape is accurate. You will know when the probe is at the water surface when the dipping motion makes the water level meter water indicator go off and on repeatedly.
4. Adjust the water level meter so that you can let go of the tape and have it hold the exact depth of the water surface at the measuring point. Wait a few minutes to see if the water level is rising, falling, or static. You can wait another 10 to 15 minutes to see if the water level will stabilize if it is not static.
5. Once you are ready to record a water level, be sure that the sensor probe is still at the water surface by dipping the tape up and down few more times. Set the water level meter aside and document your observations on your record sheet. Reel up the water meter, turn the meter off, and spray the meter tape generously with the bleach solution. It will be ready for storage or for use on another well once it dries.
6. Finally, replace all caps and secure the wellhead.



Photo courtesy of Oregon Water Resources Dept.

Inserting water level sounder tape into well head