Well Owner Maintenance Practices

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Information for Well Owners

Introduction

Routine maintenance and inspection of water wells can help protect water quality, ensure your well is operating properly, prolong the useful life of the well system, and protect your investment. Greatest of all these is the protection of your health, as water quality issues can have adverse health impacts without any detectable indicators.

Small problems can often be identified by performing maintenance before they become costly, inconvenient situations. This is similar to performing routine maintenance on a motor vehicle. If you have the oil changed at specified intervals, the engine will operate reliably much longer than if you do not. Do not become stranded without water over the relatively small cost of an annual service call—the cost of a repair call could be much higher.

At a minimum, wells should be evaluated annually by a licensed or certified water well systems professional.

An annual water well checkup should include:

- a flow test
- visual inspection
- a water quality test for coliform and anaerobic bacteria, nitrates, and anything else of local concern
- checking valves
- electrical testing.

A written report should be delivered to you following completion of an annual checkup. The report should include recommendations and all laboratory and other test results. Keep this in a safe place with all other well reports.

If possible, develop a relationship with your preferred well contractor. Similar to any other skilled practitioner, the water well systems professional may be available to advise you over the phone if an issue sounds to be like something worth investigating with a service call, or something that can be noted for the next annual checkup.

Understanding your well system

- Maintain records of any well logs. A detailed log, or record, of your well's construction and pump installation record are two important tools in troubleshooting and potentially fixing issues with your well and well pump in the future. Ask your well contractor to provide these records for you. A well log can provide information regarding the depth of the well, the type of casing used, grouting practices and intervals, static water levels, what type of pump test was performed and results, if the well is screened or not, and more.
- Be aware of any filtration or treatment systems. Know if one is installed, what type of treatment method is used, and what the water is being treated for. Read the owner's manual—at a minimum keep a copy with your well records for when an issue arises.

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What can you do to monitor your well's performance?

Visual inspection:

Wellhead

- Casing (pipe protruding from the ground)—Check the general condition and check if the casing extends at least 12 inches above ground. If not, hire a qualified professional to investigate remedial action.
- Well cap (cap on top of casing)—Check the condition of the cap and any seals present, that it is securely attached, and that it will keep out insects and rodents. If not, hire a qualified professional to repair or replace the well cap. In doing so, the water well systems professional can evaluate other considerations for the condition of the well. A compromised wellhead (cap) may allow entry for ants, bees, spiders, earwigs, etc.
- Electrical conduit (if present)—Look to visually verify that all connections are secure. If not, hire a qualified professional to investigate and repair or replace as needed.
- Survey the area above ground surrounding the well.
    - Check the location relative to potential sources of contamination, flooding, and physical dangers.
        - Look for chemicals such as paint, fertilizer, pesticides, or motor oil—remove these if possible.
        - Maintain at least 50 feet between the well and any kennels, pastures, feeding areas, or livestock operations—remove these if possible.
        - Ensure a proper distance is maintained from buildings, waste systems, or chemical storage areas (including fuel tanks)—a water well systems professional should know local codes and requirements. If there is any concern, contact your water well systems professional or your local health department.
    - Be sure the ground surrounding the wellhead is sloping away from the well to divert surface runoff. If not, consider allowing for the ground to slope away from the well casing, while maintaining a proper height of the casing above the ground. A water well systems professional can extend the height of the casing if needed.
    - If there is no concrete pad surrounding the well casing, contact your local health department or regulatory agency to determine if one should be installed by a water well systems professional.
    - If the well is equipped with a vented well cap, check for the presence of the vent screen in the well vent, and clear away any debris that has accumulated on the vent screen. Check the condition of the vent screen to ensure it can prevent insects and animals from entering.
    - Any growth of weeds, trees, shrubs, or grasses with root systems within 10 feet of the well should be physically removed. Avoid the use of chemicals or herbicides near the wellhead.
    - The well should not be in a roadway or driveway. If it is within close proximity to a roadway or driveway, it should be properly marked to avoid being hit by vehicles. You can protect your well by placing bollards or bump posts near the well's vulnerable position(s) to increase visibility.
        - Special care should be observed if your well is located near a driveway and you live where it snows. Wells easily disappear below snow cover and are easily overlooked when pushing snow takes place.

- Be conscious of any other potential threats to the wellhead—garages, ATVs, sledding hills, debris, dirt, surface water, fuels and chemicals (including fertilizers), and runoff water from kennels, pastures, or feedlots.
  - Keep the well out of dog runs or animal pens.
- If your well is located in a low-lying area prone to flooding, you should consider having your water well systems professional raise the well casing to at least 12 inches above the historic record flood level, properly sealing the wiring conduit and providing casing bump protection if floating debris is a concern. Another option is to construct a new well at a location outside the flood-prone area.

Well system components

– Visually inspect any above-ground pumping equipment. Ensure motors are properly cooled and vented (do not close them in and block air flow), check for shaft seal leaks, and rust or other signs of weakened fittings. Any maintenance other than cleaning should be left to a water well systems professional.

– Examine other above-ground well system wiring and parts such as pipes, connections, joint seals, gauges, pressure relief valves, and the water meter (if present).
  - A water sample tap should be located near the pressure tank, high enough to easily collect a water sample. Consider having a water well systems professional install one if there are none present.
  - Signs of corrosion or breakages indicate a water well systems professional should be consulted.
  - Any odor of burned connections or wiring indicates a water well systems professional or qualified electrician should be consulted. Do not attempt to repair electrical connections unless you are qualified to do so! This can lead to safety concerns and in some locations may be illegal to perform such work without a permit.

Other equipment

– Note the condition and accessibility of above- and below-ground storage tanks. Any concerns for pressures, buried tanks, or cycle times should be brought to the attention of a water well systems professional.

– Evaluate the condition of the control box and connections. Any burned odors should be investigated by a professional. Circuit breakers and fuses can generally be replaced safely, but any other electrical concerns should be handled by a qualified professional. If the control box is not firmly anchored to a wall, post, or other device, have a qualified professional remedy the situation. Control boxes normally have a screw to hold the cover in position. Check to see that the screw is in place.

– Maintain water softeners and conditioners. Have samples tested from water before and after it has been treated by the device to ensure the device is working properly. For a water softener, only use salt low in impurities. Follow the manufacturer's recommendation for the amount of salt necessary and maintain salt levels throughout its use. Look for signs the salt in the brine tank is clumping and bridging. Salt that bridges in the tank will eventually starve the

softener of salt and leave you with poor quality water. You should use a resin bed cleaner at intervals recommended by the manufacturer to keep your softener working efficiently. The water softener regeneration drain tube should have an air gap between the drain line and the drain.

– Maintain filtration equipment. Be sure filters have been maintained and replaced or recharged as required by the manufacturer and the quality of the incoming water. Keep a log of dates filters were changed. It may be advisable to keep an extra filter on hand to make sure it is changed as scheduled without having to wait on parts to come in. Proper disposal is required. It is advisable to have a water well systems professional or water treatment professional replace or recharge any filters to ensure contamination is avoided, proper filters are installed, and compliance with local regulations.

Indicators for when a well should be evaluated by a professional

Along with the points previously listed, the **following are indicators of when a water well systems professional should be called to evaluate the condition of your well**:

– Anytime the well has to be opened up (cap or well seal removed).

– If you experience taste or odor problems—have the water tested by a professional anytime there is a change in taste or odor.

– If you experience turbidity—cloudiness of water caused by presence of suspended matter ("dirty" looking).

– If there is a loss of capacity or pressure—the well is not producing as much water as previously produced, the pressure drops and surges, or the pump cycles on and off frequently.

– If a test is positive for total coliforms, anaerobic bacteria, or any positive test results indicating a potential health concern. Contact a professional or your local or state regulatory agency if you experience any positive test results or believe your well has been contaminated. A water well systems professional should be hired to thoroughly clean and disinfect any well that has had a positive "anaerobic" bacterial test result, which should include removal of any pumping equipment and evacuation of the well to its bottom to be sure of maximum removal of anaerobic growth.

– When you find defects with your wellhead, the wellhead area, or the overall water system during your routine inspections and find that you do not have the proper tools and/or knowledge to fix the issue(s). A mistake in self-servicing your well can cost you thousands of dollars, cause personal injury or death, damage personal property, and leave you and your family without water until a qualified contractor can be on-site to fix the issue(s).

Cleaning and disinfection should only be performed by a qualified water well systems professional—for your safety and protection of your well system. It is possible to lose tools or objects down the well, dose the well with too much disinfectant and not be able to get it out, have a pump get stuck when trying to remove it, or be electrocuted when working on submersible pumps. There are also concerns about gases and confined spaces that have historically cost well owners their lives because they were not professionally trained in dealing with these situations.

General considerations for groundwater protection

– Do not use your well area to mix any kind of chemicals or potential contaminants. This includes household, farm, and yard chemicals, and fertilizers. If you must rinse containers that have stored any type of contaminant or need to rinse items of potential contaminants, do it at a location far from your well. Remember, if you spill it or dump it, you may end up drinking it!

– Do not allow for back-siphoning. Keep hoses out of tanks or containers when mixing pesticides, fertilizers, or other chemicals. Make sure all of your spigots and yard hydrants have a simple backflow prevention device installed on them. These are relatively inexpensive and effectively reduce the risk to your water supply from unwanted back-siphoning events.

– Be careful when working, playing, or mowing around the well; a damaged casing can jeopardize the sanitary protection of the well. For example: do not ram the mower into the well casing, do not use the well as a game post, and do not let your children run their toys into the wellhead. Remember that wells, like most inaccessible items, lead to natural curiosity in children. A child's curiosity and ingenuity can lead to well and water quality problems. Inspect your wellhead often if accessible to children.

– Do not pile snow, leaves, or other materials around the well. Doing so can lead to contamination of your water supply and damage to the well structure. In addition, if your well stops working, you will have to move anything that blocks the service access to your well. This can delay the service work and cost you more money.

– Do not fuel vehicles or lawn mowers near your well. Remember, if you spill it or dump it, you may end up drinking it!

– Do not build around or over your well—access should be maintained in case the well requires service. Sometimes a water systems professional will need to drive a pump hoist truck or drilling rig near the well for service. Building too close to a well creates additional work for the well service contractors and may cause the well to be unserviceable. This will cost you more money. In some locations this may be prohibited.

– Have any retired wells disinfected and properly abandoned by a licensed contractor. **Do not do this yourself.** Unused and unneeded wells can be a liability to active wells using the same aquifer, as well as create personal safety concerns for people and pets. Many property owners feel that old wells are assets because they may want to use them again someday or their property is worth more because of the wells. In general, it takes a lot of work and money to bring old, unused wells back into operational condition. In addition, you have no idea if the well will meet your water quantity or quality needs until the work is completed. Based on these points, most unused and unneeded wells are actually a liability for property owners.

Shared wells

If you share a well with other households or well users, there are other considerations to think about. Because you are not the only user of the well, you may have limited say in how the water system is managed.

– Are you affected by water pressure or overall water quality issues? Talk to the other well users occasionally about their experiences with the water supply. Try to determine if the other well users experience the same water quality issues that you are.

– Has the water use changed over time? This can leave the well and/or well pump not able to keep up with current water demand. The addition of yard irrigation and swimming pools can place further demands on a water system and affect all well users if the system is not designed for or able to handle the added use.

– Do you have a well user agreement? If so, understand your well user agreement. The agreement should stipulate how well maintenance and improvements are completed and each user's responsibility and contribution to pay for the maintenance and improvements.

Resources

Michigan Department of Environmental Quality. 2013. *Your New Water Well*. Michigan Department of Environmental Quality. http://www.michigan.gov/documents/deq/dnre-ermd-dwehs-wcu-yournewwaterwellbrochure_331438_7.pdf

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