This information on the following page has come from nearly 25 years of exhaustive research and experience along with collaboration with some of the most experienced scientists in the field of hydrogeology, geophysics and geology.

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Below is a list of basic steps that should be accomplished on all wells every time you have a well drilled. Because some of these steps are not standard practice for every drilling contractor there may be additional charges from some of them. (Steps 3, 4, 5, 6, & 7 may not be applicable to open hole wells)

1. Identify drill site location.
    a. Proximity to un-drillable areas should be considered.
    b. Required setbacks should be observed.
    c. The need for geophysical exploration is area dependent.
        1. Not all areas need geophysical exploration.
2. The best method for drilling is dependent on the subsurface geology. Consider which drilling method causes the least damage to the aquifer while still accomplishing the task of drilling.
    a. The drilling process should be monitored by someone representing the property so that person can take note of the top and bottom of the production zone(s) and ask questions during the drilling process whenever possible.
3. The size of the borehole should allow for a 3-5inch (3 inch in optimal) annular space around the liner/casing for the filter pack material if a filter pack is to be installed.
4. When installing the screen, liner/casing centralizers should be used to help ensure the liner and screen is positioned in the center of the borehole.
    a. This allows for uniform distribution of the packing and plugging material (if used).
5. The screen should be placed only in the path of the production/permeable zone(s).
    a. Slot size selection is an important part of proper well completion.
6. The filter pack material should be a good match for the native zone material that will likely be encountered. (Filter material size varies by aquifer and a sieve analysis will help determine the correct material size.)
    a. Example: If the native material is a medium to fine sand, pea gravel should in most cases not be used as the packing material.
7. The filter pack material should only be placed just above the beginning of the screen (10ft or so depending on expected settling) through the zone and just below the end of the screen (5-10ft or so).
    a. In many cases the best way to install the filter pack is with a tremie pipe to help prevent bridging and to ensure the filter pack is placed around the screen in a uniform manner.
8. Everything above and below the filter pack should be properly sealed from the production zone to prevent infiltration of unwanted contaminants from the borehole wall or other permeable zone(s).
    a. Again, a tremie pipe may be the best choice to set the plug to help ensure uniform placement around the unperforated/unscreened liner/casing.
    b. In open hole situations, if there is more than one aquifer (permeable zone) encountered, all but one should be sealed off to prevent co-mingling of the aquifers.
9. Development of the well should be completed for not less than 8 hours or until the water being removed from the borehole is clear of all undissolved solids and cuttings. Surge blocks, bailing and jetting are common methods of well development. (https://waterwelljournal.com/the-well-development-process/ and https://waterwelljournal.com/the-well-development-process-2/ and https://waterwelljournal.com/goals-of-well-development/)
10. Once development is complete, a long term (often takes multiple hours) pump test should be completed which will provide detailed knowledge of the maximum sustainable yield, will help ensure the water is free of drilling debris and allow for an accurate resting static level measurement and in turn will allow for the proper sizing of the pump and any needed storage system.

Some of the resources where the above information was obtained. "The Drilling Manual, 5th Edition", "Groundwater & Wells, 2nd and 3rd Edition", multiple articles from the "Well Water Journal", and numerous experts from around the world (Prof. Dr. Christoph Treskatic, Dr. Ed Whightman, Joel Hellewege (www.justicewater.com), Ryan Travis (Geologist), Trinity Villines, Christopher Werner (www.geoumweltteam.de))