

Designing a Water Well

Quick Break Training

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Well maintenance begins with design. In the past, most wells were screened from the vadose down. This did nothing but create a potential for biofouling. Think about it. Pump comes on, the well draws down and oxygen is immediately drawn in to the formation. Then the water from the static to the pumping level begins to cascade and aerate. We are not only adding more oxygen but what ever is available begins to precipitate. This is usually the primary cause of pump and pipe fouling. Unless one is dealing with a floater there is no reason for the screen to be in or even at the dewatered zone if the hydraulics of design are right.

Be sure the well is large enough to work in. There must be room to work around the pump and down. A 4 inch pump in 4 inch well will not allow a tremmie line past the motor. One must be able to access the screen to do proper maintenance. Installing a permanent perforated (across the screen) line will go far to allow for maintenance with the pump left in place. The cost of material for a 6 or better yet an 8 inch well will be recovered in the lower labour costs to pull and reinstall the pump.

The well head should be set up so the once chemical has been added to the screen, the chemical can be circulated with the pump. With vaulted wells it is simply adding a little plumbing to the well head. As for a pitless, there is usually a tapped area in the top for pulling the pump. In most cases this can be drilled out to allow for the required flow.

Always place a pressure gauge at the well. If the pressure and flow are down and the drawdown is up, the problem is in the well. Blow-by due to broken pump or pipe is one situation but the primary problem is usually that the pump and/or drop pipe are clogged/plugged. Many times wells have been rehabilitated when all that was needed was to clean the pump and drop pipe!

Access to the pump is vital. Many times simply changing the drop pipe will save both time and money. There is a product on the market called *WELLMASTER*. This is a coated fire hose type material with stainless steel fitted ends. The pipe is cut to the set length and installed. To remove the pump a cable can be attached to the top of the pipe then placed over a roller, attached to the bumper of a truck and drive off. The best way is to use a SS safety cable attached at the pump and raise it with a boat winch. The pipe can be fed into horse trough with no need for lengths of pipe to trip over. The big savings is that a rig is not required to service the well AND NO IT WILL NOT TWIST ON START-UP.

Proper record keeping is the most important. Do not just keep records, use them. Drawdown, pressure, flow and BART test data will let you know when the well needs service. Remember to set warning points on the spread sheet to let you know when its time to do follow up testing.