

Regular maintenance of water wells, and all of the equipment that brings water to the surface and into a pipeline, is absolutely necessary. This Kansas River valley irrigation system, and the corn crop benefiting from it, appear to be on the verge of failure due to the disintegration of a \$3.00 gasket. While the farmer using this well probably only has to answer to himself if this well enters failure mode, water system operators know that customers of all ages rely on him or her to deliver safe and affordable drinking water every day of the year. Water wells provide reliable and high-quality drinking water for many cities and RWDs in Kansas. Good monitoring and recordkeeping help ensure good water production for decades, may show in advance possible well problems, and give valuable information in evaluating and correcting problems with water production and water quality.

# Water Well Monitoring

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## Equipment maintenance

Some wells need regular lubrication to protect equipment and to ensure continued water production. Wellhouses need to be kept clean and should not be used for other purposes such as storing unnecessary items.

Chlorination equipment should be regularly inspected because leaks, even small leaks, result in corrosion of electrical connections, electrical equipment, building structures, and other equipment. Even very slight corrosion of electrical connections can cause problems with switches, relays, computers, and other electrical equipment. Troubleshooting and correcting such problems are time-consuming and expensive.

Gas chlorination equipment must be kept in good operating condition. Proper venting of gas chlorinators must be provided. Gas chlorine lines and chlorine solutions lines should be checked regularly and have regularly scheduled replacements to provide against equipment damage if a leak occurs and to provide for operator safety. The chlorination room exhaust fan should be kept in proper operating conditions.



**This rural water district pumphouse is a great example of what a public water supply facility should look like. Yes, it is relatively new, but with ongoing respect and appreciation, this thoughtfully designed pumphouse will serve the managers, employees and customers for many years. Regular cleaning, with attention to weather seals and touch-up painting, the equipment inside this pumphouse will likely require fewer repairs as a pumphouse that gets less respect and appreciation.**

Sodium hypochlorite feed pumps should be closely monitored for leaks and pumping rates. If pumping rates are decreasing or erratic this may indicate a pump problem that can get worse. These feed pump lines should be monitored, and regularly replaced before leaks develop.

### Well monitoring

Too often people assume that the well or wells will continue to produce water as always. Wells will produce water as always until they don't produce water as always. The objective of monitoring well conditions is to know in advance and take actions to mitigate or avoid well problems before they occur.

Good monitoring and recordkeeping will show changing well conditions in advance. These changing conditions might result in problems such as decreasing pumping rate, daily water production, air in water, catastrophic screen and casing problems, and change in water quality.

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### Historical records on wells should include:

1. Well logs showing the geology, well construction, and aquifer
2. Monthly water production and pumping rate of each well
3. Specification documents including pump curves and manuals on pumps/motors
4. Water quality monitoring by KDHE and private labs. This is especially important with problems of iron, manganese, nitrate, selenium, arsenic, total dissolved solids and chlorides
5. Dates and extent of contractor work; invoices, reports
6. Other pertinent information and history and past problems with a well or wellfield.

problem is suspected. Regular measurements should be taken and recorded monthly until the data show some consistency; then the SWL and DWL can be taken annually or semi-annually. Such information is valuable in determining possible problems such as clogging or deterioration of well screen, water production, pump or motor going bad, and change in water quality.

Also included in well monitoring is maintaining records on monthly water production for each well and notes on changes or incidents with a well. Such notes might include electrical problems, the dates of work by any water well contractors, and the extent of contractor work.

### Historical well records

The ongoing monitoring records just mentioned should be kept in files for each well. Also, the historical records should be kept in these files. Cities and RWDS may have some of these historical records on hand, but some effort is needed to obtain the records not on hand.

These records help make determinations on well condition and water quality; much more important, these records can indicate problems in advance. These records also can save considerable time and expense in evaluating causes and fixing well problems when they occur. Some possible, suggested historical records are shown in the nearby sidebar.

### Help is available . . .

If you would like assistance in setting up a monitoring program and recordkeeping files, contact me, Jon Steele at [jon@krwa.net](mailto:jon@krwa.net) or the KRWA office at 785-336-3760. KRWA can also offer preliminary advice on what the well monitoring data might indicate and how the city or RWD should proceed.

*Jon Steele has been employed by KRWA as a Circuit Rider since 1995. Jon is certified as a water and wastewater operator. He has more than twenty-five years experience in public works, construction and industrial arts.*

