TEXAS WELL OWNER NETWORK

PROTECTING GROUNDWATER RESOURCES
AND HUMAN HEALTH



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Texas A&M AgriLife Extension Service

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BACKGROUND

- 1. Over 1,000,000 private water wells in Texas.
- 2. About 2.2 million Texans in rural areas and those living on small acreages rely on private wells for drinking water.
- 3. About 10% of the total population and 20% of the population living outside of city limits drink well water.
- 4. Two to 50% exceed nitrate MCL depending on region (TWDB 2003-2008 data for 3,861 wells).



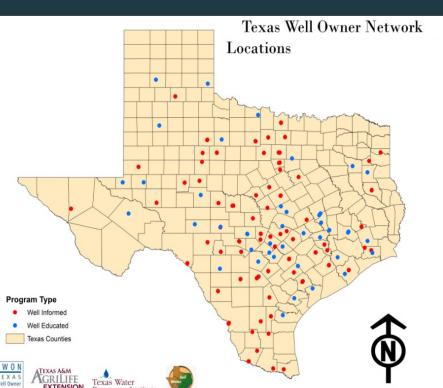
Texas Well Owner Network Program Goals

Desired Outcomes

- 1. Changes in knowledge, awareness, attitudes and actions of private well mangers.
- Improvement of private well management to safeguard homeowner health and protect water resources.

Texas Well Owner Network

- TWON was established 2011
- 9,500 participants in workshops
- 200 events
- Covering 166 counties





GRILIFE

Water Well Basics

managing the drinking water from their private wells. To protect your water supply, you need to keep records on each well, manage potential sources of contam-

Record the location of all wells or your property, and keep a file on each well. Each well will have a unique iden-tification number assigned by the driller Use this number to track historical infor mation, which may be available from the following sources

 Texas Water Development Board Groundwater Databases Registered . Texas Alliance for Cen Districts: http://www.ter through a groundwater or governed under chapters 35

Texas Water Development http://www.rwdb.sta

of contamination

Materials from many c

TEXAS A&M GRILIFE

What to Do About Coliform Bacteria in Well Water

Coliform bacteria are a large group of many kinds of bacteria, includ-ing fecal coliform bacteria, which occur naturally in the intestines of warm-blooded animals. The group also includes non-fecal coliform bacteria.

One species of fecal coliform bacteria is Escherichia coli (E. coli). If E. coli or other fecal coliform bacteria are in well water, the water has come into contact with human or animal waste and could cause disease.

People who drink water from a privat well should have the water tested at least once a year to make sure that it is safe to drink. Follow the guidelines below if you receive a positive test result for total coliform or coliform bacteria

1. Retest to confirm contamination

If you have received a positive test esult for total coliform or coliform bact ria, collect another water sample and have it tested for fecal coliform bacteria or E. coli. Although the coliform bacteria can indicate that something may be wrong with the well, the water sample that was the collection process

Coliform bacteria are very commor water has come into contact with human or animal waste. But the presence of fecal coliform or E. coli in water definitely indicates contamination by contact with human or animal waste.

When you have the water retested, ten it specifically for fecal coliform or E. coli, and take the steps below to get an accurate

- . Carefully follow the laboratory's instructions for collecting a water
- Before collecting water, remove any aerator, filter, or hose from the fau-
- Wash your hands, and do not touch
- the inside of the container.

 Use the faucet that is as close to the well as possible, or use water from a different faucet from the first sample

2. Don't drink the water

Use bottled water for drinking and cooking until you receive the results from the second water test. If bottled water is

Storing Petroleum Products to Protect Groundwater

iquid petroleum products such as gasoline, diesel, and heating fuels are often stored in aboveground (AST) or under-ground storage tanks (UST). These tanks an leak or spill, allowing

fertilizer and pesticide storage areas that are situated above the aquifer can be major sources of pollution.

The management decisions you make your property can significantly affect



A hand-dug well used groundwater.

Water Wells

Plugging **Abandoned**

Texas groundwater resources are critical to meeting our future needs.

More than half of the water used in Texas is supplied by aquifers. That makes groundwater one of our most precious resources. Protecting the quality of this vital resource is the responsibility

Many wells around homes, farms, industrial sites and urban areas have been abandoned without being properly plugged. This creates a risk to humans, animals and our water supply that cannot be ignored.

Under Texas law, the landowner is responsible for plugging abandoned water wells and is liable for any water contamination or injury that results

Associate Department Head and Extension Program Leader for Biological and Agricultural Engineering, and Extension Program Specialist, The Texas A&M System.





TWON Educational Trainings

Two Program Types

- "Well Educated"
 - Half-day, 4 hour training
 - Water sample screening
 - 8 chapter topics

- "Well Informed"
 - 1 hour educational program
 - Water sample campaign
 - Screening result interpretation
 - Wellhead protection



TWON Educational Trainings



"Well Educated"

Aquifer 101 **Aquifers of Texas**





Water Quantity





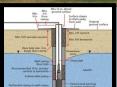
Watersheds and Aquifers





Water Quality and **Testing**





Private Water Well Basics



Water Treatment **Options**



Onsite Wastewater Treatment



Protecting Your Water Supply



TWON Educational Training

"Well Informed"

- 1 hour program
- Water Sample Screening
 - E. coli bacteria
 - Nitrates
 - Total Dissolved Solids
 - Arsenic (location driven)
- Education Program
 - Explanation of results
 - Wellhead protection
 - Stimulate initial interest and responsibility





Water Well Testing FAQs

How often should the well be tested?

- Annually for bacteria
- Every few years for general chemistry such as nitrates and salts
- As frequently as needed for other contaminants of concern

How much will it cost?

- Varies depending on analyses selected.
- Basic E. coli test should be less than \$30

PROGRAM EVALUATIONS

2-phase evaluation approach:

- 1. Pre-test/post-test
- 2. One year delayed questionnaire

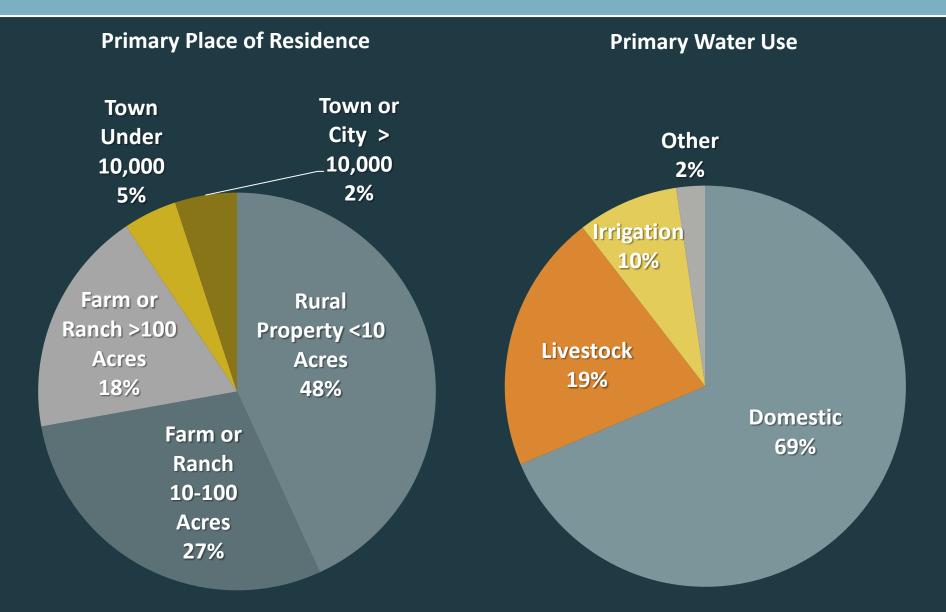
To evaluate:

- Knowledge gained
- Satisfaction with program
- "Intentions to change"





Who is our audience?



Evaluation Results

- Knowledge Change
 - Scores increase by 33 points
- Satisfaction with the program
 - **-** 99%
- Intentions to adopt BMPs
 - Test my water once a year 85%
 - Pump septic system regularly 83%
 - Remove possible hazards from well house 95%
 - Plug or cap any abandoned well on your property—85%

One Year Follow-up Results

- 90% of those needing to clean out hazards from their well house had done so.
- 74% of participants who had wells near contamination sources (pet shelters, livestock yards, etc.) had moved or removed the sources.
- 36% of participants who needed to, plugged or capped their unused/deteriorated wells.
- 55% of those with septic tanks that needed pumping had pumped their tanks.
- 76% had shared TWON resources/ materials with others not at the training.







Questions?

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