Red River Authority of Texas

Environmental Services Laboratory

PRIVATE WELL TESTING

Drinking water can contain a range of harmful pollutants and pathogens. Public water systems use treatment and monitoring processes to protect consumers from these contaminants. In contrast, private wells typically do not receive the same level of oversight, leaving well owners responsible for ensuring the safety of their water. To protect their water supply, well owners must understand the potential sources of contamination and the health risks associated with various contaminants. For more information on drinking water facts and statistics, visit: https://www.cdc.gov/drinking-water/data-research/facts-stats/index.html

Private wells can become contaminated through both natural processes and human activities. Common contaminants, their sources, and potential health effects include:

Microorganisms
Bacteria, viruses, and parasites naturally occur in the environment and in human or animal waste. Contaminated water can cause gastrointestinal illnesses. Rain, snow runoff, leaking tanks, and septic systems can introduce microorganisms into wells.

- **Coliforms:** Usually harmless, but indicate possible contamination.
- **Fecal coliform & E. coli:** Found in waste and can cause diarrhea, nausea, headaches, and other symptoms.

Anions

- **Nitrate & Nitrite:** From fertilizers, sewage, and animal waste. Dangerous for infants; high nitrate levels (≥10 mg/L) can cause blood disorders.
- **Chloride:** Levels ≥300 mg/L can corrode pipes and taste salty.
- **Sulfate:** Levels ≥300 mg/L may cause laxative effects, bitter taste, and odor.
- **Fluoride:** Naturally in groundwater; small amounts prevent cavities, but excess can cause skeletal or dental fluorosis.

Heavy Metals
Arsenic, lead, cadmium, chromium, copper, selenium, and others can enter water from plumbing, mining, industrial activities, and natural deposits. High exposure can damage the kidneys, liver, and intestines, cause anemia, and increase cancer risk.

Total Hardness
Water with high calcium and magnesium is “hard,” making it difficult to form soap lather.

Organic Chemicals
Found in household products, agriculture, and industry (e.g., pesticides, paints, solvents). Can enter wells through spills, runoff, and waste disposal. Long-term exposure may harm kidneys, liver, nervous system, circulatory system, and reproductive system.

Radionuclides
Radioactive elements like uranium and radium may be natural or from mining and nuclear activities. They can

contaminate wells via groundwater flow, seepage, or flooding. Exposure increases kidney damage and cancer risk.

For more information on private wells, visit:
https://www.epa.gov/privatewells

TESTING INFORMATION

The Environmental Services Division Lab accepts and tests samples of water intended for human consumption and use. All samples must be submitted in sterile treated bottles supplied by the ESD Lab. Bottles that are damaged, have a broken seal (applicable to microbial samples such as Total Coliform, E. coli, and Enterococcus), or are expired.

- Water samples are accepted Monday – Friday from 8:00 am to 4:00 pm. Microbial samples such as Total Coliform, E. coli, and Enterococcus, Monday – Thursday from 8:00 am to 3:00 pm
- The fee for drinking water coliform testing is on the Lab Fee sheet
- Payment must be made when the sample is delivered to the laboratory. We accept cash, checks, money orders, credit cards.
- Samples will not be processed without payment

Refer to the *RRAESL Sample Acceptance Criteria Policy* for more information on sample acceptance.

1. Sample Bottles

All samples must be submitted in sterile bottles supplied by the Red River Authority Environmental Services Laboratory. Do not use bottles that are damaged, have a broken seal (applicable to microbial samples such as Total Coliform, E. coli, and Enterococcus), or are expired. Store unused bottles in a cool and dry area away from high heat, damp conditions, direct sunlight, or contact with contaminants.

2. Sample Collection for Total Coliform

- Wash your hands before collecting the sample
- Select a cold water faucet, preferably an outside faucet that does not leak (avoid hoses, fire hydrants, dirty areas, and areas behind bushes). Do not take samples from kitchen or bathroom sinks. Avoid sampling on extremely windy days or when it is raining.
- Remove any screen or attachment to the faucet
- Clean the faucet head with isopropyl alcohol or bleach solution and/or flame with a handheld torch.
- Run the water 2 or 3 minutes to clear the line.
- Adjust the flow to a slow, steady stream about the size of a pencil
- Remove the shrink band from the bottle (do not use the bottle if the shrink band is missing)
- Remove the lid of the bottle.
  - Do not touch the inside of the lid or the bottle. Do not rinse out the bottle. Do not place the cap on the ground during sample collection. Hold the cap in your hand with the interior surface of the cap facing down during sample collection.
- Fill the bottle ABOVE the 100ml line to at least the shoulder of the bottle, leaving adequate space for mixing.
  - Do not rinse the bottle. Do not overfill the bottle. Under filled and overfilled bottles will not be analyzed
- Replace the lid tightly
- Place the sample in a cooler with ice or ice packs and transport to the lab within 28 hours of collection.
  - Do not freeze the sample. Frozen samples will not be analyzed.

Sample Collection for All Other Water Tests

- Wash your hands before collecting the sample
- Unscrew and remove the aerator screen on your faucet (if present)
- Turn on the cold water faucet and let it run for about two minutes
- Remove the cap from the sample container provided by the laboratory and slowly fill the bottle without overfilling. Some containers have preservatives in them.
    - Do not rinse out prior to sampling
- Recap the bottle tightly. Annotate on the container the location, time, and date the sample was collected

3. Fill out the required Sample Form

- Fill out all information for each sample on the Microbial Reporting Form (MRF) or the Chain of Custody (COC)
- The test result will be emailed to the email address written on the form. Reports can be mailed upon request. Please write legibly to ensure proper recording of all information.
- If you have questions about the form, please call 940-723-1717 for help completing it.

4. Sample Transport

- Deliver the sample to the laboratory as soon as possible, preferably the day of collection. Reference the *Sample Collection Requirement Guidelin*es for hold time and preservation requirements.
- Water samples should be held and transported to the lab on ice or ice packs.
- Do not allow the sample form to get wet during transport of the sample.
- If you cannot deliver the sample on the day of collection, store it in the refrigerator overnight and transport it on ice within 28 hours of collection.

5. Sample Results

- Reports will be emailed to the email address written on the form.
- You should receive your report within 10 business days.

What do your results mean?

- If Total Coliform and E. coli organisms are ABSENT
    - The water is bacteriologically safe to use at the time of sampling.
- If Total Coliform organisms are PRESENT
    - The water contains bacteria commonly found in run-off water, which might be disease-producing organisms.
- If E. coli organisms are PRESENT
    - The water contains bacteria commonly found in sewage (animal or human), which may be disease-producing organisms.
- If Total Coliform or E. coli organisms are PRESENT, the water is NOT SAFE to use for drinking, bathing, brushing teeth, washing hands, or washing any food you will eat raw.

- Disinfect the well according to the instructions (available) and submit another sample before using the water.

Disclaimer:

Results obtained from the Red River Authority Environmental Services Laboratory do not guarantee the safety of the water for drinking, irrigation, swimming, cattle, or any other use.

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