

ANNUAL

WATER QUALITY REPORT

Water testing performed in 2008



TULLAHOMA UTILITIES BOARD

PWS ID#: TN0000715

Meeting the Challenge

We are once again proud to present to you our annual water quality report. This edition covers all testing completed from January 1 through December 31, 2008. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal drinking water standards. We continually strive to adopt new and better methods for delivering the best quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please share with us your thoughts about the information in this report. After all, well-informed customers are our best allies.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

Substances That Could Be in Water

In order to ensure that tap water is safe to drink, the U.S. EPA and the Tennessee Department of Environment and Conservation prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, in some cases radioactive material, and substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and may also come from gas stations, urban storm water runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

Where Does My Water Come From?

The Tullahoma Utilities Board's water is supplied by the Duck River Utility Commission (DRUC), which treats surface water from the Normandy Reservoir. The reservoir was constructed by the Tennessee Valley Authority in 1976 and is the largest non-power generating TVA dam on any Tennessee River tributary. The dam is 110 feet high and stretches 2,807 feet across the Duck River. The reservoir is filled by flow from the upper Duck River basin and has a flood-storage capacity of 62,400 acre-feet. TVA owns the land surrounding the reservoir and is actively working with the DRUC and the State of Tennessee Division of Water Pollution Control to protect the reservoir. The DRUC has implemented many new security measures at its facilities to protect against vandalism and other forms of attack.

Residents of Tullahoma and the surrounding area consume more than one billion gallons of water each year. Currently, TUB serves over 9,400 water customers. The system maintains 265 miles of water mains and eight elevated water storage tanks with a total storage capacity of four million gallons.

Source Water Assessment

The DRUC, TVA, and the Tennessee Department of Environment and Conservation (TDEC) are actively working to protect the reservoir from sources of pollution and to assess vulnerability to potential contamination. The TDEC has prepared a Source Water Assessment Program (SWAP) report that assesses the susceptibility of Normandy Reservoir to potential contamination, and it has been rated as reasonably susceptible (high), based on geological factors and human activities in the vicinity of the reservoir. An explanation of Tennessee's Source Water Assessment Program, the Source Water Assessment summaries, susceptibility scoring, and the overall TDEC report to the U.S. EPA can be viewed online at <http://state.tn.us/environment/dws/dwassess.shtml>, or you may contact the DRUC at (931) 455-6458, or the TDEC at (888) 891-TDEC, to obtain copies of specific assessments.

Community Participation

You are invited to participate in our monthly board meetings and to voice your concerns about your drinking water. We meet on the fourth Tuesday of each month, beginning at 5:30 p.m. at the Tullahoma Utilities Board (TUB) Service Center, 901 S. Jackson Street, Tullahoma. The meetings are always open and the public is invited to attend.

How Is My Water Treated and Purified?

The DRUC water treatment plant utilizes advanced water treatment technology to remove both particulate matter and dissolved contaminants from the water before it is disinfected and pumped into the TUB distribution system. The reservoir water entering the facility is first oxidized and disinfected by the injection of chlorine dioxide. Traditional pretreatment with gaseous chlorine was discontinued in 1988 in favor of chlorine dioxide because it does not create certain regulated byproducts. After oxidation and disinfection, particulate matter is coagulated, which causes the particles in the water to stick to each other. The water then moves into settling basins where these new larger particles sink to the bottom and are removed. The clarified water is vacuumed through hollow fiber ultrafiltration membranes and then through eight huge granular activated carbon (GAC) contactors. These new membranes are designed to remove all remaining particulate matter, even particles smaller than a bacteria or virus. The GAC contactors absorb any remaining organic compounds that can cause objectionable tastes and odors. After GAC filtration, the water is pH neutralized to prevent corrosion, and a chlorine disinfectant residual is added before the water is pumped into the distribution system. The Hardness of our water is 50.0 ppm or 2.9 grains.

Questions?

For more information about this report, or for any questions relating to your drinking water, please call Scott Young, Water and Wastewater Systems Manager, or Brian Skelton, General Manager, Tullahoma Utilities Board, at (931) 455-4515.

Cryptosporidium Oocysts

From 2003 to 2005, the DRUC completed 24 months of testing on reservoir water for this common organism that can be found in nature, mostly as a result of the presence of wildlife and livestock animals. During only 5 of the 24 monthly sampling events were oocysts detected. Those five samples ranged from 1 to 17 oocysts/liter of water. The test results are very low, indicating little contamination of the reservoir from livestock or wildlife. Note: Federal regulations now require all surface water systems serving more than 10,000 people to sample for *Cryptosporidium*.

Cryptosporidium is a microbial parasite which is found in surface water throughout the United States. No *Cryptosporidium* oocysts were detected in any finished water samples. *Cryptosporidium* is effectively removed by filtration, and the DRUC system currently provides treatment which is designed to remove *Cryptosporidium*. The U.S. EPA has determined that the presence of *Cryptosporidium* at the concentration level reported in our source water is insignificant, based on level of treatment the DRUC currently provides. Symptoms of *Cryptosporidium* infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immune-compromised people have more difficulty and are at a greater risk of developing a severe, life threatening illness. Immune-compromised individuals are encouraged to consult their doctor regarding appropriate precautions to take to prevent infection. For more information on *Cryptosporidium*, contact the Safe Drinking Water Hotline (800-426-4791).

Tap vs. Bottled

Thanks in part to aggressive marketing, the bottled water industry has successfully convinced us all that water purchased in bottles is a healthier alternative to tap water. However, according to a four-year study conducted by the Natural Resources Defense Council, bottled water is not necessarily cleaner or safer than most tap water. In fact, about 25 percent of bottled water is actually just bottled tap water (40 percent according to government estimates).

The Food and Drug Administration is responsible for regulating bottled water, but these rules allow for less rigorous testing and purity standards than those required by the U.S. EPA for community tap water. For instance, the high mineral content of some bottled waters makes them unsuitable for babies and young children. Further, the FDA completely exempts bottled water that's packaged and sold within the same state, which accounts for about 70 percent of all bottled water sold in the United States.

People spend 10,000 times more per gallon for bottled water than they typically do for tap water. If you get your recommended eight glasses a day from bottled water, you could spend up to \$1,400 annually. The same amount of tap water would cost about 49 cents. Even if you installed a filter device on your tap, your annual expenditure would be far less than what you'd pay for bottled water.

For a detailed discussion on the NRDC study results, check out their Web site at www.nrdc.org/water/drinking/bw/exesum.asp.

Lead and Drinking Water

U.S. EPA NOTICE ON LEAD: If present, elevated levels of lead can cause serious health problems, especially for pregnant woman and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. DRUC is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, test methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead. THERE IS NO LEAD IN THE WATER PRODUCED BY THE DRUC WATER TREATMENT PLANT.

Contamination from Cross-connections

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems), or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand) causing contaminants to be sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools, or garden chemicals. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Community water supplies are continually jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. We have surveyed all industrial, commercial, and institutional facilities in the service area to make sure that all potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test each backflow preventer to make sure that it is providing maximum protection.

For more information, review the Cross-Connection Control Manual from the U.S. EPA's Web site at www.epa.gov/safewater/crossconnection.html. You can also call the Safe Drinking Water Hotline at (800) 426-4791.

Sampling Results

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. Although all of the substances listed here are under the Maximum Contaminant Level (MCL), we feel it is important that you know exactly what was detected and how much of the substance was present in the water.

The state allows us to monitor for certain substances less than once per year because the concentration of these substances do not change frequently. In these cases the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES¹

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | MCL [MRDL] | MCLG [MRDLG] | AMOUNT DETECTED | RANGE LOW-HIGH | VIOLATION | TYPICAL SOURCE |
|--|--------------|------------|--------------|-----------------|----------------|-----------|---|
| Barium (ppm) | 2006 | 2 | 2 | 0.024 | 0.024–0.024 | No | Erosion of natural deposits; Discharge of drilling wastes; Discharge from metal refineries |
| Chlorine (ppm) | 2008 | [4] | [4] | 1.99 | 1.54–1.99 | No | Water additive used to control microbes |
| Chlorine Dioxide (ppb) | 2008 | 800 | 800 | 510 | 10–510 | No | Water additive used to control microbes |
| Chlorite (ppm) | 2008 | 1 | 0.8 | 0.71 | ND–0.71 | No | By-product of drinking water disinfection |
| Haloacetic Acids [HAA] (ppb) | 2008 | 60 | NA | 24 | ND–38 | No | By-product of drinking water disinfection |
| Nitrate (ppm) | 2008 | 10 | 10 | 0.38 | 0.38–0.38 | No | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits |
| TTHMs [Total Trihalomethanes] (ppb) | 2008 | 80 | NA | 44 | ND–49 | No | By-product of drinking water chlorination |
| Total Organic Carbon (ppm) | 2008 | TT | NA | 1.7 | 0.8–1.7 | No | Naturally present in the environment |
| Turbidity² (NTU) | 2008 | TT | NA | 0.14 | ND–0.14 | No | Soil runoff |
| Turbidity (Lowest monthly percent of samples meeting limit) | 2008 | TT | NA | 100 | NA | No | Soil runoff |

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | AL | MCLG | AMOUNT DETECTED (90TH%TILE) | SITES ABOVE AL/TOTAL SITES | VIOLATION | TYPICAL SOURCE |
|-----------------------------|--------------|-----|------|-----------------------------|----------------------------|-----------|--|
| Copper (ppm) | 2008 | 1.3 | 1.3 | 0.22 | 0/61 | No | Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives |
| Lead (ppb) | 2008 | 15 | 0 | ND | 2/61 | No | Corrosion of household plumbing systems; Erosion of natural deposits |

UNREGULATED SUBSTANCES

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | AMOUNT DETECTED | RANGE LOW-HIGH | TYPICAL SOURCE |
|-----------------------------|--------------|-----------------|----------------|---|
| Sodium (ppm) | 2008 | 3.1 | 3.1–3.1 | Natural erosion; Component of water additives |

¹We were required by the U.S. EPA to conduct an evaluation of our distribution system. This is known as an Initial Distribution System Evaluation (IDSE) and is intended to identify locations in our distribution system that have elevated disinfection by-product concentrations. Disinfection by-products (e.g., HAAs and TTHMs) result from continuous disinfection of drinking water and form when disinfectants combine with organic matter that naturally occurs in the source water.

²Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

Definitions

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant

Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable.

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to

the average person.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

