

# 2000 Aberdeen Municipal Water Quality Report

Since the depression, the citizens of Aberdeen have been drinking safe tap water produced at the Aberdeen Water Works 1 3/4 miles south of Ordway. This annual water quality report will provide you, the consumer, a summary of the results of the many stringent water quality tests required by the environmental protection agency (EPA). These water quality tests are frequently performed on water samples taken from locations throughout the community to ensure the citizens of Aberdeen are receiving safe, quality water.

## The Water Treatment Plant

Historically referred to as the filtration plant, the Aberdeen Water Works was built in 1934 on the banks of the Elm River 7 miles northeast of Aberdeen near the small village of Ordway. The state-of-the-art lime softening plant was a marvelous improvement to a town used to drinking the bad tasting, mineral laden well water from the Middle James aquifer. The facility dependably served the community for 25 years before it was expanded to accommodate the increasing water demands of a growing community.

Twenty years later, the facility began to show its age, and the second upgrade included major expansion provisions designed to meet the needs of a city of 50,000 residents. Completed in 1981, the second upgrade relied on the same conventional treatment technology and therefore did not improve upon the process used to chemically and physically treat the water.

Today we are engaged in our most ambitious and extensive renovation to the water treatment plant, yet. Brought on, in part, by the ever-increasing demands of the EPA water quality requirements, our improved water treatment plant will incorporate the first advancements to the treatment process since the foundation was first laid. More consistent water quality will be the result, and consumers can expect better tasting, colorless water during those periods when the Elm River is particularly difficult to treat.

The water treatment plant uses a three-stage clarification process including lime and soda ash softening. Clarification is a physical and chemical process which causes the suspended particles found in untreated water to agglomerate together and settle to the bottom of the tanks. Clarification is followed by dual media filtration, and disinfection is achieved through the use of chloramines and occasionally, chlorine dioxide. Fluoride is added to retard tooth decay, and a stabilizing compound is included to prevent the corrosion of water pipes.

Pilot testing of new treatment techniques at the water treatment plant are currently proving that new clarification and membrane filtration will more efficiently produce a finer quality of water from the Elm River than any utility in the midwest. Anticipated completion of new construction of these processes, if approved by the city commission, will be in 2005.

## The WEB Water Decision

Aberdeen is considering an offer from WEB Water Develop to provided treated water for the community. The primary factors under consideration by the city commission include the following issues regarding increased cost and anticipated rusty water problems:

Existing water treatment budgets are approximately \$1 million to supply all of our current water needs.

Future annual payments to WEB, if they supply all of our current water needs would exceed \$4 million. Aberdeen would pay WEB between \$32,000 and \$42,000 each month for their connection fees.

The city's current cost of production is less than \$1 per 1000 gallons sold.

The costs for purchasing WEB water range from \$2.80 to \$4.62 per 1000 gallons sold.

The average customer currently pays \$72 for three months of water service.

The average customer would pay \$139.59 per quarter if WEB supplied all of the water.

Aberdeen would pay for WEB's treatment plant upgrade and distribution system expansion through it's water rate.

The Elm River watershed has nearly run dry during drought years. Aberdeen nearly ran out of water in 1974. The Missouri River should be a reliable supplementary water supply during Aberdeen's future drought periods.

Aberdeen has issued only three water restrictions in 20 years.

WEB water would "scour" Aberdeen's water mains and cause rusty water whenever the supply was switched from the Aberdeen treatment plant to WEB water.

Using any amount less than our full demand from WEB requires continued upgrading of the water treatment plant to meet surface water treatment regulations.

Aberdeen's future water treatment improvements will produce a better quality of water than WEB or any other utility currently produces.

## The Water Source

Aberdeen's water supply begins in the headwaters of the Maple and Elm Rivers south of Jamestown in La Moure County, North Dakota. The five water storage dams, including Elm Lake Dam and Willow Creek Dam were built in the 1930's to hold back **6.5 billion gallons** of water for the City of Aberdeen. An additional low-head dam and pumping station was constructed in 1976 to divert water from the Elm River into Willow Creek Reservoir during dry seasons. The Elm River is well known throughout the region for its fickle flow rates and ever changing water quality. This makes the surface water extremely complicated to process. However, our record of effectively facing these challenges has earned the community a solid reputation throughout the state for consistently making safe water from the most complex water supply in South Dakota.

The watershed contributing to the Elm River and its tributaries is heavily influenced by agricultural practices. The City of Aberdeen is cooperating with the South Dakota Department of Environment and Natural Resources (DENR) in the EPA's source water protection program to identify and minimize sources of agricultural waste and pollution in our surface water supply.

Additionally, Aberdeen's surface water supply is occasionally supplemented by well water pumped from the Elm Aquifer at the Eyestone Pit well field. The wells primarily function as a reserve water supply for dry seasons, however at times the cleaner ground water from the wells is blended with surface water when the Elm River is particularly muddy or deeply colored.

## The Surface Water Treatment Rule

The Surface Water Treatment Rule involves several tests including turbidity. Turbidity has no health effects. However, turbidity can interfere with disinfection and may provide a medium for microbial growth. Turbidity may indicate the presence of disease causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

For a few hours in July 1999 when the Elm River was an extraordinarily deep brown color, our treatment process was unable to remove all the color from the water. Color is another factor influencing turbidity measurements. Subsequently, the treated water flowing from the water plant exceeded the maximum turbidity limit of 0.5 NTU. This constituted a treatment technique violation. Extensive bacteriological testing of the drinking water throughout the distribution system in the days and weeks to follow discovered no presence of disease causing organisms.

## The Water Quality Tests

Aberdeen drinking water is routinely tested as it leaves the water treatment plant, at various locations throughout the distribution system, and at least 29 times a month from faucets in homes and businesses all over town. Many water samples are tested in our own laboratory every day, however more than 360 samples are mailed to the state health lab in Pierre throughout the year.

These samples are analyzed for various substances either occurring naturally in the environment or produced from human activities. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, radioactive material if present, and can pick up substances resulting from animal life processes and human activity. Contaminants that may be in our source water before we treat it can be categorized as follows:

*Microbial Contaminants*, such as viruses and bacteria, result from plant and animal life processes and are naturally occurring in all surface waters. Typical sources of microbial contaminants are sewage treatment plants, septic systems, livestock, and wildlife.

*Radioactive Contaminants* are usually naturally occurring and come from certain minerals as water passes over or through them. Mining and oil/gas production are also typical sources.

*Inorganic Contaminants* such as salts and metals are either found naturally in our soils, leach from corroding pipes, result from manufacturing, or runoff from fertilizer use.

*Synthetic Organic Contaminants* primarily result from the use of pesticides and herbicides. Runoff from landfills and factory waste also can cause these contaminants to be found in water sources.

*Volatile Organic Contaminants* occur in drinking water primarily due to industrial discharges, stormwater runoff, and petroleum spills.

A *detected* contaminant is any of the above substances found in the water sample at or above its minimum detection limit, even if it is found to be present in quantities well below harmful levels.

The EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. 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 contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 800-426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised 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 can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC 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.

## The Water Quality Test Results

The following definitions and abbreviations help explain the table of detected contaminants.

### Definitions

The following terms are used in this report:

- ?? **Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- ?? **Maximum Contaminant Level (MCL):** 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.
- ?? **Maximum Contaminant Level Goal (MCLG):** 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.
- ?? **Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water.

### Abbreviations

The following abbreviations are used in the table of this report:

- ?? **N/A:** not applicable
- ?? **N/D:** not detectable at testing limit
- ?? **NTU:** nephelometric turbidity unit (a measure of undissolved solids)
- ?? **pCi/l:** picocuries per liter (a measure of radioactivity)
- ?? **ppm:** parts per million or milligrams per liter
- ?? **ppb:** parts per billion or micrograms per liter
- ?? **TTHMs:** total trihalomethanes (a disinfection by-product)

For additional information regarding the results of the many tests conducted on our drinking water or for clarification of the information contained within this report, please call the Aberdeen Water Works at (605) 626-7011. A summary of all the water test data is available from the water department and will be posted to our website at [www.aberdeen.sd.us](http://www.aberdeen.sd.us).

**The Table of Detected Contaminants** (see insert)

# City of Aberdeen 2000 Municipal Water Quality Report

[www.aberdeen.sd.us/water](http://www.aberdeen.sd.us/water)

*City of Aberdeen  
Water Treatment  
12668 391<sup>st</sup> Ave  
Aberdeen, SD 57401*

The 1996 amendments to the Safe Drinking Water Act contain extensive provisions for consumer involvement and right-to-know that herald a new era of public participation in drinking water protection. These provisions are founded on the principle that consumers have the right to know what is in their drinking water and where it comes from before they turn on their tap. With the information provided in these provisions, the centerpiece of which is this annual water quality report, consumers will be better able to make health decisions for themselves and their families.

**ATTENTION LANDLORDS:** *This report is provided for every consumer of Aberdeen Water. It is **your** responsibility to disseminate copies of this report to your tenants. Please contact the City of Aberdeen Public Works Department at 626-7011 or stop by city hall to obtain additional copies for your renters.*

**LARGE PRINT VERSIONS OF THIS REPORT ARE AVAILABLE AT CITY HALL.**