CONTAMINATION SOURCES

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 and, in some cases, radioactive material, and can pick up 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, and wildlife.
- **Inorganic contaminants**, such as salts and metals, which can be naturally-occurring or 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 stormwater runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

As part of a nationwide program, the North Dakota Department of Health completed an assessment of our source water and determined our water system is **moderately susceptible to** potential contaminant sources. They also noted, “Historically, SWA has effectively treated this source water to meet drinking water standards.” Information about the Source Water Assessment can be obtained by calling 1-888-425-0241, or e-mailing us at swa@swwater.com.

About SWA’s Quality Water

At SWA, our highest priority is your family's health where drinking water is concerned. With that thought in mind, SWA is pleased to report that this water system was in compliance with all drinking water regulations in 2017. SWA wants all of our valued customers to be informed about this water utility, therefore if you have any questions about this report or any other concerns, please contact Ken Knight, Water Treatment Plant Operator or Sandy Burwick, CFO/Office Administrator at 888-425-0241 or e-mail us at swa@swwater.com.

In order to allow individuals who consume SWA’s drinking water, but who do not receive water bills, to learn about this water system, we would appreciate it if large volume water customers would post copies of this report in conspicuous locations or distribute them to tenants, residents, patients, students, and/or employees.

Source and Treatment

SWA takes Missouri River Water from Lake Sakakawea. This is a surface water source. The intake is about 86 miles northeast of Dickinson. From the intake, the water is pumped to the Zap Reservoir and then flowed by gravity to the Dodge pump station where chlorine and ammonia are added to form chloramines. The job of chloramines is to kill disease producing bacteria and viruses in the water. The water then travels to the Richardson Reservoir and pump station. Sodium permanganate is added at the Richardson pump station when offensive tastes and odors are present due to changes in water quality that may have been attributed to lake turnover, variations in lake level, spring runoff, algae, and other factors. From the Richardson pump station, the water is pumped to the Dickinson Reservoir and then flows by gravity to the Water Treatment Plant in Dickinson where it is treated using the following processes:

- **Clarifying and softening**, where quicklime is added to the water to change dissolved calcium and magnesium (hardness) into undissolved particles. Alum and a flocculant are then added to collect those particles into heavier pieces that will settle out of the water.
- **Stabilization**, where carbon dioxide is added to bring pH down to acceptable levels. Phosphate is added to limit scale and corrosion. Fluoride is also added to provide resistance to tooth decay.
- **Filtration**, where seven sand and anthracite coal filters remove suspended particles not removed in the clarifying and softening process. Filtration can also be effective in the physical removal of the protozoan Cryptosporidium.
- **Disinfection**, where chloramines are once again added to reduce bacteria to a safe level and provide a residual that protects against contamination.

From here the drinking water is pumped through the distribution system for delivery to you, our valued customer.

Drinking Water Safety

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 (800-426-4791). More information about drinking water is available on EPA’s website at www.epa.gov/safewater.

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/Centers for Disease Control and Prevention/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 (800-426-4791).
### DETECTED CONTAMINANTS

EPA requires us to monitor for over 90 drinking water contaminants and those that were detected are listed in the table below. Test results are from 2017. The State does allow reduced monitoring for certain contaminants because their levels do not change significantly over time. For this reason, some of the test results may be more than one year old.

### DEFINITIONS AND ABBREVIATIONS

**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.

**Maximum Residual Disinfectant Level Goal (MRDLG)** – The level of a disinfectant in drinking water 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.

**Most Probable Number per 100ml (MPN/100/ml)** – The measure of 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.

**Parts per billion (ppb)** – 1 ppb is equivalent to adding 1 pound of a contaminant to 999,999,999 pounds of water (about 120,000,000 gallons).

**Parts per million (ppm)** – 1 ppm is equivalent to adding 1 pound of a contaminant to 999,999,999 pounds of water (about 120,000,000 gallons).

**Quality Assurance Project Plan (QAPP)** – A required process intended to reduce the number of samples with turbidity limits.

**Quality Control (QC)** – A required process intended to reduce the number of samples with turbidity limits.

**Quality Assurance/Quality Control (QA/QC)** – A required process intended to reduce the number of samples with turbidity limits.

**Treatment Technique (TT)** – A required process intended to reduce the number of samples with turbidity limits.

**Water Quality (WQ)** – A required process intended to reduce the number of samples with turbidity limits.

**Waterborne Contaminants** – A required process intended to reduce the number of samples with turbidity limits.

**Water Treatment Plant Operator (WTO)** – A required process intended to reduce the number of samples with turbidity limits.

### SOUTH WEST WATER AUTHORITY’S TABLE OF DETECTED REGULATED CONTAMINANTS

<table>
<thead>
<tr>
<th>Contaminant (units)</th>
<th>MCLG</th>
<th>MCL</th>
<th>Level Detected</th>
<th>Detection Range</th>
<th>Test Date</th>
<th>Exceedance or Violation?</th>
<th>Major Sources in Drinking Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Organic Carbon (TOC) Removal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alkalinity (ppm) Source Water</td>
<td>N/A</td>
<td>N/A</td>
<td>171</td>
<td>151-171</td>
<td>2017</td>
<td>N/A</td>
<td>Natural erosion, plant activities, and certain industrial waste discharges</td>
</tr>
<tr>
<td>Total Organic Carbon (ppm) Source Water</td>
<td>N/A</td>
<td>TT</td>
<td>3.72</td>
<td>3.23-3.72</td>
<td>2017</td>
<td>N/A</td>
<td>Naturally present in the environment</td>
</tr>
<tr>
<td>Total Organic Carbon (ppm) Finished Water</td>
<td>N/A</td>
<td>TT</td>
<td>2.59</td>
<td>2.17-2.59</td>
<td>2017</td>
<td>N/A</td>
<td>Naturally present in the environment</td>
</tr>
<tr>
<td><strong>Microbial Contaminants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Coliform</strong></td>
<td>N/A</td>
<td>TT</td>
<td>.3</td>
<td>.16</td>
<td>2017</td>
<td>100% of samples met turbidity limit</td>
<td>Soil runoff</td>
</tr>
<tr>
<td><strong>Total Coliform</strong></td>
<td>N/A</td>
<td>TT</td>
<td>.3</td>
<td>.16</td>
<td>2017</td>
<td>100% of samples met turbidity limit</td>
<td>Soil runoff</td>
</tr>
</tbody>
</table>

### SOUTH WEST WATER AUTHORITY’S TABLE OF DETECTED UNREGULATED CONTAMINANTS

<table>
<thead>
<tr>
<th>Contaminant (units)</th>
<th>MCLG</th>
<th>MCL</th>
<th>Level Detected</th>
<th>Detection Range</th>
<th>Test Date</th>
<th>Exceedance or Violation?</th>
<th>Major Sources in Drinking Water</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inorganic Contaminants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicarbonate as HCO3 (ppm)</td>
<td>N/A</td>
<td>N/A</td>
<td>209</td>
<td>181-209</td>
<td>2017</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Disinfectants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chloramines (ppm)</td>
<td>MRLD = 4</td>
<td>MRLD = 4.0</td>
<td>3.1</td>
<td>2.73-3.42</td>
<td>2017</td>
<td>N/A</td>
<td>Water additive used to control microbes</td>
</tr>
<tr>
<td>Total Haloacetic Acids (ppb)</td>
<td>0</td>
<td>60</td>
<td>13</td>
<td>10.1-15.77</td>
<td>2017</td>
<td>No</td>
<td>By-product of drinking water disinfection</td>
</tr>
<tr>
<td>Total Trihalomethanes (ppb)</td>
<td>0</td>
<td>60</td>
<td>7</td>
<td>4.49-8.52</td>
<td>2017</td>
<td>No</td>
<td>By-product of drinking water disinfection</td>
</tr>
</tbody>
</table>

### DETECTED CONTAMINANTS

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

2. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Southwest Water Authority is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. Use water from the cold tap for drinking and cooking. 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 drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at https://www.epa.gov/lead.

3. The EPA requires testing for certain unregulated contaminants, but has not established enforceable drinking water standards for them. They are monitored to determine whether or not future regulation is warranted. To obtain information about these tests you may contact Ken Knight, Water Treatment Plant Operator or Sandy Burwick SWA CFO/Office Administrator at 888-425-0241 or e-mail us at swa@swwater.com.

### Source Water Microbiological Monitoring

The SWA has a program of testing its untreated water supply for Cryptosporidium and E. coli as part of Round 2 of the Long Term 2 Enhanced Surface Water Treatment Rule.

- Cryptosporidium is a microbial parasite found in surface water throughout the U.S. Although filtration removes Cryptosporidium, the most commonly used filtration methods cannot guarantee 100 percent removal. Our monitoring did not detect any presence in the source water.
- E. Coliform is a pathogenic bacteria commonly found in surface water and originates in the intestinal tract of warm blooded animals. In the 12 samples taken, only three detected any presence in the source water, the highest measuring 3.1 MPN/100 ml. Disinfection and filtration effectively removes E. Coliform.
- Giardia is a microbial parasite commonly found in source water. Our monitoring did not detect any presence in the source water.

### Learn More

Visit our website at www.swwater.com to learn more about water quality. You are welcome to attend any of SWA’s regularly scheduled meetings, which are generally held on the first Monday of each month. If you are aware of non-English speaking individuals who need assistance with the appropriate language translation, please contact SWA at the number listed above. If you are interested in attending or would like to request agenda time, please contact SWA at the number listed above for information on time and location.