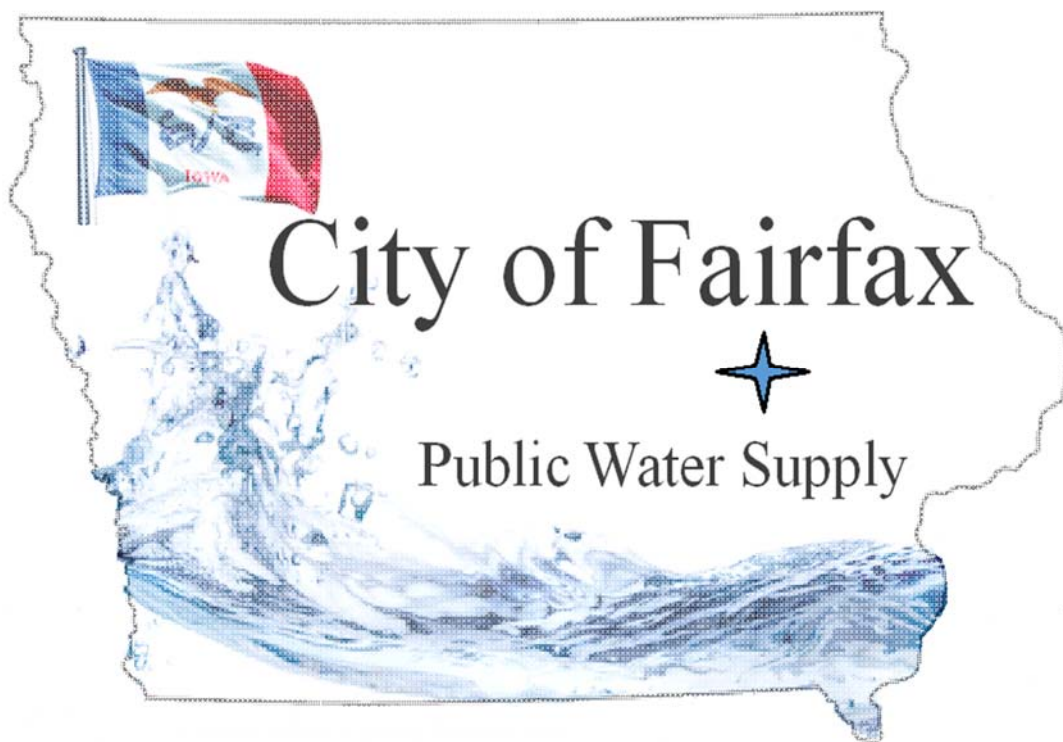


WATER

Consumer Confidence Water Quality Report 2016



From aquifer to tap...

Taste Tip:

If you feel Fairfax drinking water has a chlorine taste, try leaving an open pitcher of it in your refrigerator overnight. The chlorine will be reduced by morning.

The City of Fairfax Water Department is pleased to present the 2016 Annual Water Quality Report. The City of Fairfax has a quality water source that meets all the state and federal EPA primary standards for public health. We are currently inspecting and upgrading all three of our wells so that we can maximize our water production at the lowest cost for our growing city before any additional wells are needed. In January we completed the filter media replacement at the water plant. The new media has greatly improved the iron being removed from well #3.

Important Questions

What to expect from your drinking water? 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 Environmental Protection Agency's Safe Drinking Water Hotline (1-800-426-4791).

What are sources of contamination to drinking water? 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 presences of animal or human activity.

Contaminants that may be present in source water include:

- (A) **(B) Microbial contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife;
- (B) **(B) Inorganic contaminants**, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;
- (C) **(C) Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;
- (D) **(D) 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 storm water runoff, and septic systems; and
- (E) **(E) Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

Who needs to take special precautions? 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 persons and infants can be particularly at risk from infection. 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 microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Lead in plumbing fixtures:

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. FAIRFAX WATER SUPPLY 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, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

Water System Backup Measures: In the event of unexpected problems the City has a few backup systems built into our utility to ensure our customers have a constant flow of drinking water. With the current three wells if any one of the three is off line the other two will be able to keep up with the current demand. We are working to increase the production of water at all three of our wells and water plant to help avoid water conservation measures. The water plant at the tower has a backup generator to supply power to well #3 in the event of a power outage. Wells #1 and #2 will have a backup generator installed this summer. The City of Fairfax has 200,000 gallons of water stored in an elevated tank during normal operations. An additional future elevated water tower is being planned and should be completed in about three years. A study on a future well field is being done.

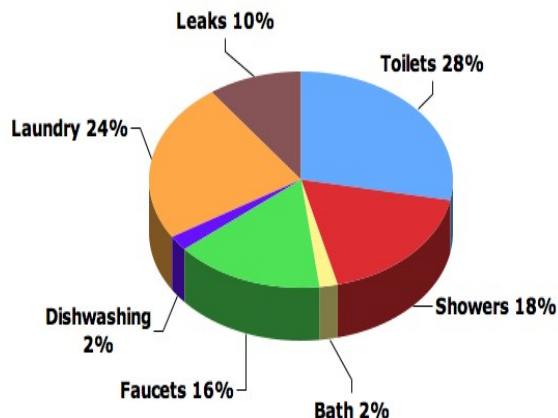
ABOUT OUR WATER...

What's in Fairfax's drinking water? The EPA requires regular sampling of the City's water supply to ensure drinking water safety. In 2016 we ran over 1,500 tests for different substances. The good news is that none of the contaminants that we detected exceeded EPA established Maximum Contaminant Levels or resulted in a violation of drinking water standards. Only a very small percentage of the contaminants tested for exist in our water at detectable levels. The tables on the back pages identify the contaminants that were detected. The Iowa DNR requires us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though accurate, is more than one year old.

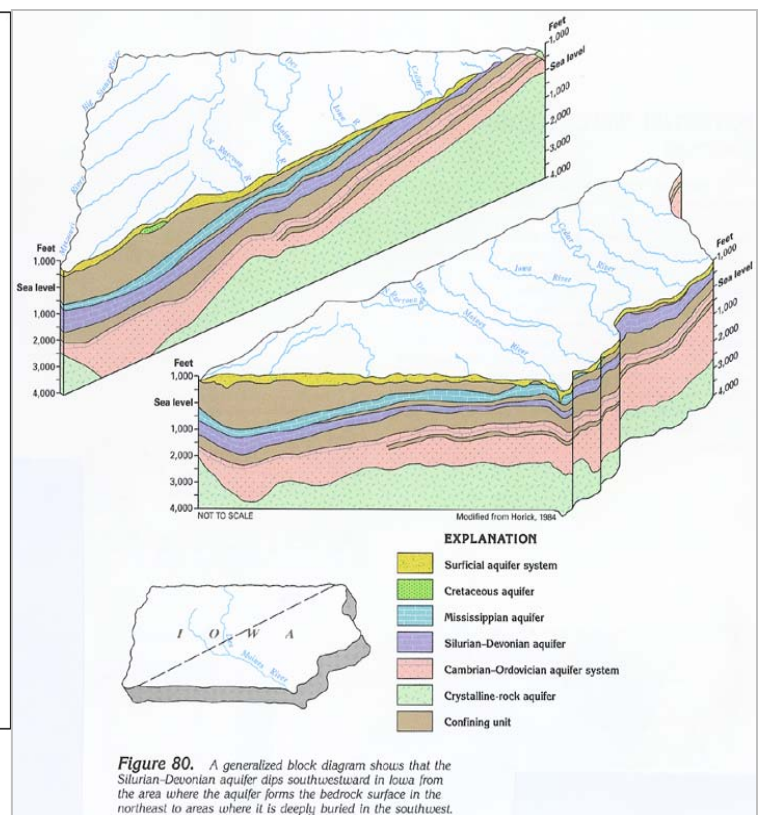
What is the source of Fairfax's drinking water? The City of Fairfax obtains 100% of its water from three wells from the dolomite of the Silurian aquifer that was created long ago by glacial activity. The Silurian aquifer was determined to be susceptible to contamination because of the characteristics of the aquifer. Overlying materials provide some protection from contaminants from the land surface. The Silurian wells will be susceptible to surface contaminants such as leaking underground storage tanks, contaminant spills, and excess fertilizer application. Well #1 is at 305 Main St. and was drilled in 1959; it can produce 120,000 gallons in 12 hours. Well #2 is across the street from #1 and was drilled in 1979; it can also produce 120,000 gallons in 12 hours. Well #3 is at 910 2nd St. and was drilled in 1999; it produces 147,000 gallons in 12 hours going through six filters to remove iron. Fairfax produced over 57 million gallons of drinking water in 2016. This is an average of 56 gal/person/day usage. The national average is 80-100 gal/person/day usage. So the customers of Fairfax are doing a great job of conserving our water resource. Thank You.

A detailed evaluation of your source water was completed by the Iowa Department of Natural Resources and is available from the Water Operator at 319-389-8439.

Figure 1. Indoor Water Use in a Typical Single Family Home



Source: Aquacraft, 1999. Residential End Uses of Water Study (for American Water Works Association Research Foundation)



WHAT WE ARE DOING...

System Improvements: In January of 2016 the City replaced the filter media at the water plant with Anthracite Coal to help improve the iron removal from the raw water at well #3. The iron concentration of well #3 is approximately 0.9 mg/L. The secondary MCL (*Maximum Contaminant Level*) per the EPA is 0.3 mg/L. With the new media we maintain a 0.1 mg/L after 500K gallons used. We are now removing three times more iron at 175% increase of treated water before backwashing the filters. This year the City will be performing maintenance on all wells. Wells #1 and #2 will be cleaned, televised and acid washed to help open the rock formations below to aid in more water production. Well #3 will be cleaned, televised and a new pump installed to increase production for the two new filters that will be added to the current water plant. These improvements will help the current water needs for our growing City before any additional wells are needed in the next few years.

The City of Fairfax sent out a home water line survey to the original part of Fairfax. This will aid us in selecting the proper sites for our required lead and copper testing each year. The City will contact high risk sites with suggestions in helping with corrosion in the home's water lines.

Hydrant flushing: Twice a year during the spring and fall, you may see Water Department personnel flushing fire hydrants. We do this to remove the accumulation of iron sediment in the pipes, thereby reducing discolored water situations over the long term. Be aware, that hydrant flushing may temporarily cause both a drop in water pressure and discolored water.

Who do I contact for more information? For more information about drinking water contact the EPA Safe Drinking Water Hotline at 800-426-4791; or contact the Iowa DNR Region 1 Office at (563)-927-2075; or contact The City of Fairfax at (319)-846-2204.

City Council Meetings are held the second Tuesday of every month at 6:00 PM, upstairs at 300 80th Street Court, Fairfax, Iowa.



A Word: This February we conducted an in home water line survey in the original part of town to help us identify the proper sites for our required lead and copper testing. We will still accept any surveys that are still not filled out. I thank all the participants for taking time in helping us with this requirement. Our City is growing and we are taking steps to ensure our customers have ample safe drinking water at the highest quality we can provide. I welcome any comments or concerns so please contact me at kstensland@cityoffairfax.org or (319)-389-8439.

Thank You. Water and Wastewater Supervisor Kevin Stensland

Frequently Asked Questions:

What is hard water? Fairfax's water contains the naturally occurring mineral calcium, which is better known as hardness. Water was described as "hard" when people found it *hard* to make soap suds or lather from the water. The presence of calcium in the water is not a health concern but rather somewhat of a nuisance that is very costly to remove on a large scale. Some individuals use a water softener to remove unwanted hardness. Calcium buildup can be removed from spigots and coffee pots using vinegar. Fairfax's water hardness is about 420 mg/L or 24.5 grains (Hard).



Why do I occasionally see discolored water leaving my tap? Discolored water is usually due to the presence of rust (iron). Rust in drinking water can be caused by corrosion in the pipes that carry the water from the treatment plant to your home or corrosion in your home's plumbing, including the hot water heater. Rust is typically not dangerous in terms of health but it can stain laundry. Do not heat-dry laundry washed in rusty water. Problems with discolored water usually clear themselves within a day.



Cloudy water, also known as white water, is caused by air bubbles in the water. It is completely harmless.

Water under pressure holds more air than water that is not pressurized. Once the water comes out of your tap, the water is no longer under pressure and the air comes out of solution as bubbles (similar to a carbonated soft drink). The best thing to do is let it sit in an open container until the bubbles naturally disappear. If you have a prolonged discolored water problem, please notify us.



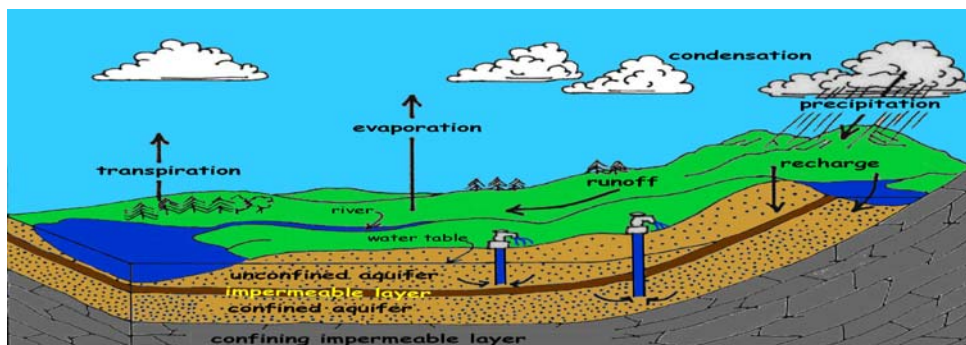
Do water filters remove bacteria? Reverse osmosis filters use normal household water pressure to force water through a semi permeable membrane, which separates contaminants from the water. They're great for removing bacteria and viruses, but they won't remove all chemical pollutants.

What contaminants does Reverse Osmosis remove? Reverse osmosis systems will remove some common chemical contaminants (metal ions, aqueous salts), including sodium, chloride, copper, chromium, and lead; may reduce arsenic, fluoride, radium, sulfate, calcium, magnesium, potassium, nitrate, and phosphorous.



How do I know when my water heater is going to fail? Generally, most water heaters that are **more than 10 years old** should be considered for replacement. If your water heater is in a location that will not cause damage if there is a leak, you can wait until it develops a leak before replacing it, but that really is not recommended. If you discover **rusty water** coming from your water heater and it only comes from the hot side piping in your home, this can be a sign that your water heater is rusting away on the inside and it may begin to leak soon. When you can hear **rumbling or banging sounds** coming from the water heater as it is heating up, this is a sign that the water heater is at the end of its useful life. This is sediment building up on the bottom of the tank. As the sediment is heated and reheated, it eventually will harden. If you notice **moisture around your water heater** you may have a small leak or a fracture in the tank. As the metal heats, it expands and if there are slight fractures, water may leak from the tank. Once the metal has cooled the inner tank will stop leaking.

How does the rainwater or snow melt get into aquifers? Precipitation infiltrates or moves downward through



the soil and travels until it finds an opening. Snow could melt on a mountain top, run down the side of the mountain, and find a creek. It then moves downward through the soil and travels until it reaches the surface again in a river or ocean and then it's evaporated into the atmosphere. That is a complete cycle for a water drop.

Why do I need a backflow device? The City of Fairfax requires the use of a backflow preventer device on all lawn irrigation systems. A backflow preventer is a device that prevents water from flowing backward. They are two main types that are used on irrigations systems.

One type is a Pressure Vacuum Breaker: The Pressure Vacuum Breaker (PVB) must be installed so that the bottom of the assembly is 12" higher than the highest sprinkler head or point of use, so is best used when the lawn is level.



Another type is a Reduced Pressure Assembly: The Reduced Pressure Assembly (RPA) can be used when there are elevation changes in the lawn. **Both backflow assemblies must be tested once a year by a licensed certified tester and a copy submitted to the City of Fairfax.**



13 Ways to Conserve Water at Home:

- **Evaluate your water habits:** Have a family discussion about water use and ways to cut down.
- **Look for leaks:** Dripping faucets and toilet tank leaks (*Add food color to the toilet tank and wait 15 minutes, if the color is in the bowl, this means you have a leak*)
- **Check your water system for leaks:** Locate your water meter and write down the number, wait 30 minutes with no water usage in the home and then recheck the number. If there is a difference you may have a leak.
- **Install water-saving devices:** Low flow faucets, toilets and shower heads
- **Save water while preparing food:** Use a brush and bowl to clean food instead of letting the water run.
- **Flush toilet when necessary:** Don't use the toilet to dispose of trash. Also consider installing a low flow toilet.
- **Know the proper setting for your washer:** Match the settings on the washer to your load size, presoak heavily soiled loads.
- **Wash dishes wisely:** Use a dishwasher if you have one; by hand, soak pots and pans, don't let water run continuously.
- **Be efficient in the shower and bath:** Take shallow baths and short showers.
- **Use less water to clean your home:** Use a pail or basin instead of running water; presoak grills and oven parts overnight.
- **Check hoses and irrigation systems:** Use nozzles with off settings, consider drip irrigation systems, repair sprinkler heads.
- **Minimize watering outdoors:** Water when the sun is down, let grass grow taller in hot weather, use plants that are drought resistant.
- **Keep up with pool and hot tub care:** Don't overfill, use covers to slow down evaporation, check walls and filtration system for leaks and repair.

2016 Water Quality Report

Test Results

| CONTAMINANT | MCL - (MCLG) | Compliance | | Date | Violation | Source |
|-------------|--------------|------------|-----------------|------|-----------|--------|
| | | Type | Value & (Range) | | Yes/No | |

Disinfection By-Products

| | | | | | | |
|--|----------|------|------|-----------|----|--|
| Total Trihalomethanes (ppb) [TTHM] | 80 (N/A) | LRAA | 2.87 | 9/30/2016 | No | By-products of drinking water chlorination |
| Total Haloacetic Acids (ppb) [HAA5] | 60 (N/A) | LRAA | 12.8 | 9/30/2016 | No | By-products of drinking water disinfection |

Inorganic Contaminants

| | | | | | | |
|--------------|--------------|------|--|------|----|--|
| Lead (ppb) | AL=15 (0) | 90th | 9.00 (ND - 11) | 2016 | No | Corrosion of household plumbing systems; erosion of natural deposits |
| Copper (ppm) | AL=1.3 (1.3) | 90th | .847 (.148-1.460) 1 sample(s) exceeded AL | 2016 | No | Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives |

Residual Disinfectants 950 - Distribution System

| | | | | | | |
|----------------|-------------------------|-----|------------------|------------------|----|---|
| Chlorine (ppm) | MRDL=4.0 (MRDLG=4.0) | RAA | 2.89 (1.52-2.55) | 1st Quarter 2016 | No | Water additive used to control microbes |
|----------------|-------------------------|-----|------------------|------------------|----|---|

01 - Finished Water Sample Tap, #1

| | | | | | | |
|--|-----------------------|-----|---------------|------------|----|---|
| Combined Radium (pCi/L) | 5 (0) | RAA | 3.7 (2.9-4.7) | 12/31/2016 | No | Erosion of natural deposits |
| Nitrate (ppm) | 10 (10) | SGL | <1.0 | 4/5/2016 | No | Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits. |
| Organic Chemicals (ppb) Volatile Organic Compounds Synthetic Organic Compounds | 0.2 - 700 (ND-700) | SGL | ND | 4/7/2016 | No | Runoff from industrial sites, herbicides, petroleum sites, insecticides and PVC factories |
| Fluoride (ppm) | 4 (4) | SGL | 0.51 | 2/6/2015 | No | Water additive which promotes strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories |
| Sodium (ppm) | N/A (N/A) | SGL | 59.3 | 4/9/2014 | No | Erosion of natural deposits; Added to water during treatment process |

02 - Finished Water Sample Tap, #2

| | | | | | | |
|--|-----------------------|-----|------|-----------|----|---|
| Gross Alpha, inc (pCi/L) | 15 (0) | SGL | 3.22 | 2/20/2012 | No | Erosion of natural deposits |
| Combined Radium (pCi/L) | 5 (0) | SGL | 4 | 3/9/2015 | No | Erosion of natural deposits |
| Nitrate (ppm) | 10 (10) | SGL | <1.0 | 4/5/2016 | No | Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits. |
| Organic Chemicals (ppb) Volatile Organic Compounds Synthetic Organic Compounds | 0.2 - 700 (ND-700) | SGL | ND | 4/7/2016 | No | Runoff from industrial sites, herbicides, petroleum sites, insecticides and PVC factories |
| Fluoride (ppm) | 4 (4) | SGL | 0.53 | 3/2/2015 | No | Water additive which promotes strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories |
| Sodium (ppm) | N/A (N/A) | SGL | 58.5 | 10/6/2016 | No | Erosion of natural deposits; Added to water during treatment process |

Note: Contaminants with dates indicate results from the most recent testing done in accordance with regulations.

Test Results

| CONTAMINANT | MCL - (MCLG) | Compliance | | Date | Violation | Source |
|---|--------------|------------|------------------|------------|-----------|---|
| | | Type | Value & (Range) | | Yes/No | |
| 03 - Finished Water Sample Tap, #3 | | | | | | |
| Combined Radium (pCi/L) | 5 (0) | RAA | 1.8 | 10/12/2015 | No | Erosion of natural deposits |
| Nitrate (ppm) | 10 (10) | SGL | <1.0 | 7/19/2016 | No | Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits. |
| Nitrite (ppm) | 1 (1) | RAA | <0.1 (<0.1-<0.1) | 10/3/2016 | No | Runoff from fertilizer use; leaching of septic tanks, sewage; erosion of natural deposits. |
| Fluoride (ppm) | 4 (4) | RAA | 0.69 | 4/1/2015 | No | Water additive which promotes strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories |
| Sodium (ppm) | N/A (N/A) | SGL | 31.2 | 10/6/2016 | No | Erosion of natural deposits; Added to water during treatment process |

Note: Contaminants with dates indicate results from the most recent testing done in accordance with regulations.

Definitions:

- 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 the contaminant in drinking water below which there is no known or expected risk to health. MCLG allow for a margin of safety.
- ppb—parts per billion.
- ppm—parts per million.
- pCi/L—picocuries per liter.
- N/A—Not applicable
- ND—Not detected
- RAA—Running Annual Average
- LRAA—Locational Running Annual Average
- Treatment Technique (TT)—A required process intended to reduce the level of a contaminant in drinking water.
- Action Level (AL)— The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- Maximum Residual Disinfectant Level Goal (MRDLG)— 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.
- Maximum Residual Disinfectant Level (MRDL)— The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectants is necessary for control of microbial contaminates.
- SGL— Single Sample Result
- TCR— Total Coliform Rule