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Water Treatment: The Key to Great Water

Most large cities like Fargo use surface water as the community water source. Surface water sources can provide more water volume than localized groundwater wells, and surface water is a renewable resource compared to groundwater. Surface water quality, however, is variable - highly dependent on weather and other environmental conditions. For this reason, more rigorous water treatment processes are required for surface water sources.

The City of Fargo maintains one of the most sophisticated water treatment facilities in the United States, and consumers should know that the treatment plant has undergone several security upgrades since the 9/11 attack. The chemical and physical processes used at the plant convert a source water with variable characteristics into a consistently safe, soft, and good-tasting drinking water.

Water from the Red River is hard, and the water treatment process centers around softening the water. The water softening process reduces hardness from an average of 17 grains per gallon to a target value of 7 grains per gallon. Some residual hardness in the finished water is beneficial, preventing the water from becoming too corrosive.

After softening, the water is disinfected with ozone gas and then filtered to remove fine particles, additional hardness, and dissolved minerals like iron. All EPA standards for water clarity were met for 2010. Finally, chloramine is added before distribution to provide disinfection right up to the tap in Fargo homes.

The Red River: Fargo's Water Source

Our public water system, in cooperation with the North Dakota Department of Health, has completed the delineation and contaminant/land use inventory elements of the North Dakota Source Water Protection Program. Based on the information from these elements, the North Dakota Department of Health has determined that our source water is moderately susceptible to potential contaminants.

The primary water source for the Fargo Water Treatment Plant is the Red River. The Midtown Dam pools a sufficient depth of water to accommodate a water intake. The city also has alternate sources of water that can be used under extraordinary circumstances. An intake and pumping station on the Sheyenne River south of West Fargo can deliver water via pipeline to the treatment plant. The City of Fargo also owns 52% of the stored water rights to Lake Ashtabula, acquired by funding construction of the Baldhill Dam at Valley City. During a drought, water from the lake can be released into the Sheyenne River to provide water for Fargo's needs. Approximately a 2-year supply of water exists in the lake. This source was used during the dry years of 1976, 1984, and 1988.

Cryptosporidium

In January of 2007, the City of Fargo began monthly testing of our source water for the presence of Cryptosporidium. Two years of source water monitoring for public water systems is required under the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), implemented by the EPA in 2003.

Cryptosporidium is a microbial parasite which is found in surface waters throughout the United States.

Although filtration removes Cryptosporidium, the most common filtration methods cannot guarantee 100% removal.

The results of the 24 samples analyzed indicated an average of 0.030 oocysts per liter in the City of Fargo's source water. Per the guidelines of the LT2ESWTR, a source water with this concentration of Cryptosporidium falls into the lowest of 4 levels of required treatment. As dictated by the rule, the sample results indicate that the City of Fargo will not be required to implement additional treatment beyond that currently in place. Current treatment processes at the Fargo Water Treatment Plant include multi-stage clarification, filtration and two-stage disinfection.

Symptoms of Cryptosporidium infection may include nausea, diarrhea and abdominal cramps. Most healthy individuals are able to overcome these symptoms within a few weeks. However, immuno-compromised individuals have more difficulty and are at greater risk of developing severe or potentially life threatening illness.

Cryptosporidium must be ingested to cause disease and it may be ingested through means other than drinking water. Immuno- compromised individuals are encouraged to consult their doctor regarding the appropriate precautions to take to avoid infection.

The City of Fargo has a drought management plan that monitors water flow, river levels and the precipitation index. The city has adopted an ordinance that mandates citizen participation during drought activity to reduce the impact to all water users. For more information about the drought management plan visit:
www.cityoffargo.com/water

Observe Fargo's odd/even lawn watering schedule from Memorial Day to Labor Day to help reduce the peak demand.

City of Fargo Water Treatment Plant 2010 Water Quality Report

CITY OF Fargo

Fargo Water Treatment Plant
701-241-1469

Bruce P. Grubb
Enterprise Director

Ron Hendricksen
Water Treatment Plant Superintendent

If you have questions about Fargo drinking water, or if you are aware of non-English speaking individuals who need help with the appropriate language translation, please contact the Water Treatment Plant at the number listed below. If you are a large volume user, please distribute a copy of this Water Quality Report to consumers who do not receive a bill. If you would like opportunities for public participation in decisions that affect water quality, please attend City Commission meetings which are held every other Monday at 5 p.m. You can check the city's web site for exact meeting dates at
www.cityoffargo.com/commission

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2010 Laboratory Testing Results for Fargo Water

Unregulated Contaminants

Detected Substance	Units of Measure	Date of Analysis	Level Found in Fargo Water	Range of Detections
Alkalinity, Carbonate	ppm	6/14/10	9	-----
Bicarbonate as HCO3	ppm	6/14/10	113	-----
Bromide	ppm	12/13/10	0.203	ND-0.203
Calcium	ppm	6/14/10	41.7	-----
Chloride	ppm	6/14/10	25.6	-----
Conductivity @ 25 C UMHOS/CM	umho/cm	6/14/10	800	-----
Total Hardness (AS CAC03)	ppm	6/14/10	143	-----
Iron	ppm	6/14/10	0.086	-----
Magnesium	ppm	6/14/10	9.3	-----
Nickel	ppm	6/14/10	0.00184	-----
PH	PH	6/14/10	8.69	-----
Potassium	ppm	6/14/10	10.5	-----
Sodium	ppm	6/14/10	104	-----
Sodium Adsorption Ratio	obsvns	6/14/10	3.79	-----
Sulfate	ppm	6/14/10	245	-----
TDS	ppm	6/14/10	500	-----
Zinc	ppm	6/14/10	0.0141	-----

Regulated Contaminants

Detected Substance	Units of Measure	Date of Analysis	MCL	MCLG	Level Found in Fargo Water	Range of Detections	Typical Source in Drinking Water
Barium	ppm	6/14/10	2	2	0.0135	-----	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Fluoride	ppm	6/14/10	4	4	1.21	-----	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate-Nitrite (as Nitrogen)	ppm	4/12/10	10	10	1.1	-----	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Lead	ppb	8/5/08	90% of samples must be < 15 ppb (AL)	-----	90% of samples < 4.0	One sample exceeded 15 ppb	Corrosion of home plumbing systems; Erosion of natural deposits
Copper	ppm	8/5/08	90% of samples must be < 1.3 ppm (AL)	-----	90% of samples < 0.121	No samples exceeded 1.3 ppm	Corrosion of home plumbing systems; Erosion of natural deposits.
Selenium	ppb	6/14/10	50	50	1.43	-----	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines.
Gross Alpha Emitters	pCi/l	2/8/10	15	15	0.402	-----	Erosion of natural deposits.
Combined Radium	pCi/l	2/8/10	5	-----	0.546	-----	Erosion of natural deposits.
Combined Uranium	ppb	2/8/10	30	-----	0.6	-----	Erosion of natural deposits.
Bromate	ppb	10/31/10	10	-----	4	ND-15	By-product of drinking water disinfection.
Haloacetic Acids (HAA5)	ppb	12/31/10	60	-----	16	2.88-31.7	By-product of drinking water disinfection.
Total Trihalomethanes	ppb	12/31/10	80	-----	8	1.2-17	By-product of drinking water disinfection.
Total Coliform Bacteria	Positive Samples	Monthly	Present in 5% of monthly samples	Present in no samples	Present in 1% of samples in December	-----	Naturally present in the environment.
Chloramine	ppm	1/31/10	4 MRDL	4 MRDLG	3.5	2.7-3.9	Water additive used to control microbes.
Turbidity	NTU	Daily	TT; 1.0 and <0.3 95% of the time	-----	100% of samples < 0.3	0.19	Soil runoff.

Substance *SOURCE WATER*	Date	Highest Level Found	Units	Range of Detection
Total Alkalinity	3/31/10	381	MG/L	160-381
Total Organic Carbon (TOC)	11/30/10	10.7	MG/L	7.21-10.70
FINISHED WATER Total Organic Carbon (TOC)	3/31/10	6.47	MG/L	4.08-6.47

Before the City of Fargo can deliver water to your home, it must first be thoroughly tested in certified laboratories that can detect trace amounts of contaminants. The Fargo test results for last year are shown in the table above. **No contaminants were detected that exceeded EPA limits in drinking water.**

The sources of drinking water (both tap 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.

What You Need to Know About Drinking Water Regulations

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (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. 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).

Fargo water is tested for nearly 100 different contaminants. Only those detected are listed in the table on this page.

Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

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. The City of Fargo 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 the 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 http://www.epa/gov/safewater/lead.

Some people may be more vulnerable to contaminants found 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).

Contaminants that may be present in source water:

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 industrial and petroleum process by-products and can also come from gas stations, urban stormwater runoff, and septic systems.
Radioactive contaminants, which can occur naturally or result from oil and gas production and mining activities.

Total Organic Carbon (TOC) Removal Performance Requirements The Fargo Water Treatment Plant is required to remove total organic carbon (TOC) from the source water. During 2010, the required removal rate was 25-30%. Our removal rate varied between 37.7% and 54.3% in 2010.

KEY TO TERMS AND ABBREVIATIONS IN THE TABLE

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.
MCL - Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology.
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.
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.
Highest Compliance Level/Level Found: The highest level of that contaminant used to determine compliance with a National Primacy Drinking Water Regulation.
Range of Detections: The lowest to highest result value recorded during the required monitoring timeframe for systems with multiple entry points.
Turbidity is a measure of water clarity monitored at the Fargo Water Treatment Plant. Certain treatment techniques (TT) are required to reduce the level in the drinking water. Regulations require turbidity to be <0.3 NTU 95% of the time and <1.0 NTU 100% of the time.

ppb: parts per billion **ppm**: parts per million **NTU**: Nephelometric Turbidity Units **ND**: None detected **pCi/L**: picocuries per liter (a measure of radioactivity)
umho/cm: micromhos per centimeter (a measure of conductivity)
obsvns: observations/field at 100 power