2016

ANNUAL DRINKING WATER QUALITY REPORT

CASS RURAL WATER USERS DISTRICT

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Cass Rural Water Users District (CRWD) is a political subdivision of the State of North Dakota pursuant to Chapter 61-35 of the North Dakota Century Code, operating a water system serving all of Cass County as well as parts of Traill, Barnes, and Richland counties. CRWD currently serves over 4,987 users through a distribution system of approximately 2,355 miles of PVC (plastic) pipe. CRWD was formed in 1973 and was constructed over the next seven years in three separate phases. Each phase was constructed with its own well field, treatment plant, and pumping stations. CRWD has its annual membership meeting in March.

CRWD, as required by the Federal Safe Drinking Water Act (SDWA), has prepared and is distributing to our customers our 18th annual drinking water quality report. This is our opportunity to share information on the quality of water we provide to your home, apartment, or business. In addition, this report is an educational tool that allows us to inform you of the source of our water, our treatment facilities, and processes. It is our daily goal to provide you with a safe and dependable supply of drinking water.

If you own or manage an apartment complex or have renters, we encourage you to share this report with them. If you have any questions regarding this report please call Chief Systems Operator Brent Brinkman at 701-428-3139. If you are aware of non-English speaking individuals who need help with a language translation, please call Brent at the number listed above.

CASS RURAL WATER DISTRICT'S WATER SOURCES:

1. Source water for CRWD on all three phases is well water. CRWD does not use lakes, rivers, or streams. Phase I source water (West Fargo Aquifer) comes from four wells. Well water enters the treatment facility at the same location which can produce 880 gallons per minute (gpm) of finished water. In a typical 24-hour period, 500,000 gallons of water are treated and pumped.
2. Source Water for CRWD Phase II (Sheyenne Delta Aquifer) comes from 11 wells. Well water enters the treatment facility at the same location which can produce 1,600 gpm of finished water. In a typical 24-hour period, 500,000 gallons of water are treated and pumped.
3. Source water for CRWD Phase III (Page Aquifer) comes from three wells. Well water enters the treatment facility at the same location which can produce 600 gpm of finished water. In a typical 24-hour period, 400,000 gallons of water are treated and pumped. CRWD system-wide daily output is 1,200,000 to 1,500,000 gallons per day (mgd).
4. Source water for the following Townships 139-49 section 32 N ½ and 138-49 sections 1, 2, 5, 6, 11, 12, 13, 14, 23, 24, 25, 26, 35 and 138-48 section 7, 18, 19, 30, 31 and 140-49 sections 1, 2 SE, 12 and 13 are provided by the City of Fargo via 11 metered vaults.

SOURCE WATER ASSESSMENT:

CRWD is involved in the Wellhead Protection program. For any questions referring to Wellhead Protection please call CRWD at 701-428-3139. 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 for Phase 1, 2 and 3 is not susceptible to potential contaminants. For water

purchased from the City of Fargo, the North Dakota Department of Health has determined that source water is moderately susceptible to potential contaminants.

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 materials, and can pick up substances resulting from the presence of animals or from human activity.

This report has required definitions of terms, language requirements, tables of water quality data, and other information you may find interesting and educational. To help you better understand these terms we have provided the following definitions:

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.

ENSURING SAFE WATER

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. The 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).

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 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 Cyptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

In the following tables you will find many terms and abbreviations you may not be familiar with. To help you understand these terms we've provided the following definitions:

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

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 disinfectant is necessary for control of microbial contaminants.

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

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

Non-Applicable (N/A) – does not apply

Parts per million (ppm) or Milligrams per liter (mgL) – One part per million corresponds to one minute in two years or a single penny in $10,000.

Parts per billion (ppb) or Micrograms per liter (µgL) – One part per billion corresponds to one minute in 2,000 years, or a single penny in $10 million.

Picocuries per liter (pCi/L) – Picocuries per liter is a measure of the radioactivity in water.

MCLs are set at very stringent levels. To understand the health effects described for many regulated contaminants, a person would have to drink two liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

EPA requires monitoring of over 80 drinking water contaminants. Those contaminants listed in the following tables are the only contaminants **detected** in your drinking water.

TABLE OF DETECTED REGULATED CONTAMINANTS

The data presented is for 2016 or the most recent in accordance with the state and federal regulations.

2016 TEST RESULTS OF "DETECTED" REGULATED CONTAMINANTS
090-1060 Phase I

Date	Contaminant	Violation Yes/No	Level Detected	Unit of Measure	MCLG	MCL	Range of Detection	Likely Source of Contamination
Copper/Lead								
7/27/15	Copper*	No	0.781 90th%	ppm	N/A	AL=1.3 ppm	N/A	Corrosion of household plumbing, erosion of natural deposits
7/27/15	Lead*	No	2.8 90th%	ppb	N/A	AL=15 ppb	N/A	Corrosion of household plumbing, erosion of natural deposits
*No sites exceeded action level for copper and lead								
Inorganic Contaminants								
5/13/10	Arsenic	No	1.1	ppb	0	10	N/A	Runoff from orchards, erosion of natural deposits, glass and electronic factory runoff
Disinfectants								
5/31/16	Chlorine	No	3.1	ppm	MRDL =4	MRDL =4	2.50 to 3.74	Water additive used to control microbes
Stage 2 Disinfection By-products (HAA5/TTHM)								
12/31/16	HAA5	No	4	ppb	N/A	60	N/A	By-product of drinking water chlorination
12/31/16	TTHM	No	5	ppb	N/A	80	N/A	By-product of drinking water chlorination

2016 TEST RESULTS OF "DETECTED" REGULATED CONTAMINANTS
090-1124 Phase II

Date	Contaminant	Violation Yes/No	Level Detected	Unit of Measure	MCLG	MCL	Range of Detection	Likely Source of Contamination
Copper/Lead								
7/21/15	Copper*	No	1.03 90th%	ppm	N/A	AL=1.3 ppm	N/A	Corrosion of household plumbing, erosion of natural deposits
7/21/15	Lead	No	2.01 90th%	ppb	N/A	AL=15 ppb	N/A	Corrosion of household plumbing, erosion of natural deposits
Inorganic Contaminants								
3/14/16	Arsenic	No	1.93	ppb	0	10	N/A	Runoff from orchards, glass and electronic factory runoff, erosion of natural deposits
2/22/16	Nitrate-Nitrite	No	0.38	ppm	10	10	N/A	Runoff of fertilizer use, erosion of natural deposits
Radioactive Contaminants								
7/27/10	Gross Alpha, Including RA Excluding RN & U	No	0.33	pCi/L	15	15	N/A	Erosion of natural deposits
7/27/10	Radium, Combined (226, 228)	No	0.453	pCi/L		5	N/A	Erosion of natural deposits
7/27/10	Uranium, Combined	No	2.2	ppb		30	N/A	Erosion of natural deposits
Disinfectants								
8/31/16	Chlorine	No	1.2	ppm	MRDL =4	MRDL =4	0.87 to 1.67	Water additive used to control microbes
Stage 2 Disinfection By-products (HAA5/TTHM)								
12/31/16	HAA5	No	15	ppb	N/A	60	N/A	By-product of drinking water chlorination
12/31/16	TTHM	No	24	ppb	N/A	80	N/A	By-product of drinking water chlorination

*One site exceeded action level for copper

2016 TEST RESULTS OF "DETECTED" REGULATED CONTAMINANTS
090-1131 Phase III

Date	Contaminant	Violation Yes/No	Level Detected	Unit of Measure	MCLG	MCL	Range of Detection	Likely Source of Contamination
Copper/Lead								
7/21/15	Copper*	No	0.32 90th%	ppm	N/A	AL=1.3 ppm	N/A	Corrosion of household plumbing, erosion of natural deposits
7/21/15	Lead*	No	1.68 90th%	ppb	N/A	AL=15 ppb	N/A	Corrosion of household plumbing, erosion of natural deposits
Inorganic Contaminants								
3/14/16	Arsenic	No	5.14	ppb	0	10		Runoff from orchards, glass and electronic factory runoff, erosion of natural deposits
Disinfectants								
9/30/16	Chlorine	No	1.2	ppm	MRDL =4	MRDL =4	0.94 to 1.45	Water additive used to control microbes
Stage 2 Disinfection By-products (HAA5/TTHM)								
12/31/16	HAA5	No	4	ppb	N/A	60	N/A	By-product of drinking water chlorination
12/31/16	TTHM	No	13	ppb	N/A	80	N/A	By-product of drinking water chlorination

*No sites exceeded action level for copper and lead

2016 TEST RESULTS OF "DETECTED" REGULATED CONTAMINANTS
090-1483 Cass Rural Water District Fargo

Date	Contaminant	Violation Yes/No	Level Detected	Unit of Measure	MCLG	MCL	Range of Detection	Likely Source of Contamination
Copper/Lead								
7/19/16	Copper*	No	0.178 90th%	ppm	N/A	AL=1.3 ppm	N/A	Corrosion of household plumbing, erosion of natural deposits
7/19/16	Lead*	No	2.1 90th%	ppb	N/A	AL=15 ppb	N/A	Corrosion of household plumbing, erosion of natural deposits
Disinfectants								
8/31/16	Chloramine	No	3.2	ppm	MRDL =4	MRDL =4	2.76 to 3.49	Water additive used to control microbes
Stage 2 Disinfection By-products (HAA5/TTHM)								
12/31/16	HAA5	No	12	ppb	N/A	60	5.5 to 25.48	By-product of drinking water chlorination
12/31/16	TTHM	No	8	ppb	N/A	80	2.91 to 15.01	By-product of drinking water chlorination

*No sites exceeded action level for copper and lead

2016 TEST RESULTS OF "DETECTED" REGULATED CONTAMINANTS
Results provided by City of Fargo for the area of Cass Rural Water District Fargo
Please see your specific table below for your lead, copper, TTHM and HAA5 results.

Date	Contaminant	Violation Yes/No	Level Detected	Unit of Measure	MCLG	MCL	Range of Detection	Likely Source of Contamination
Copper/Lead								
8/12/14	Copper*	No	0.145 90th%	ppm	N/A	AL=1.3 ppm	N/A	Corrosion of household plumbing, erosion of natural deposits
8/12/14	Lead*	No	3 90th%	ppb	N/A	AL=15 ppb	N/A	Corrosion of household plumbing, erosion of natural deposits
*No sites exceeded action level for copper and one site exceeded for lead								
Inorganic Contaminants								
2/24/14	Arsenic	No	1.08	ppb	0	10	N/A	Runoff from orchards, glass and electronic factory runoff, erosion of natural deposits
6/14/10	Barium	No	0.0135	ppm	2	2	N/A	Runoff of fertilizer use, erosion of natural deposits
6/14/10	Fluoride	No	1.21	ppm	4	4	N/A	Runoff of fertilizer use, erosion of natural deposits
5/16/16	Nitrate-Nitrite	No	0.08	ppm	10	10	N/A	Runoff of fertilizer use, erosion of natural deposits
6/14/10	Selenium	No	1.43	ppb	50	50	N/A	Runoff of fertilizer use, erosion of natural deposits
Radioactive Contaminants								
2/8/10	Radium, Combined (226, 228)	No	0.546	pCi/L		5	N/A	Erosion of natural deposits
2/8/10	Uranium, Combined	No	0.6	ppb		30	N/A	Erosion of natural deposits
Disinfectants								
1/31/16	Chloramine	No	3.4	ppm	MRDL =4.0	MRDL =4	3.13 to 3.6	Water additive used to control microbes
Unregulated Contaminants								
12/12/16	Bromide	No	0.252	ppb	0	10	0.022 to 0.252	By-product of drinking water disinfection
Total Organic Carbon Removal								
12/31/16	Alkalinity Source	No	364	mg/L	N/A	N/A	159.00 to 364.00	Naturally present in the environment
12/31/16	Carbon, Total Organic (TOC) - Finished	No	6.84	mg/L	N/A	N/A	3.01 to 6.84	Naturally present in the environment
5/31/16	Carbon, Total Organic (TOC) - Source	No	13.9	mg/L	N/A	N/A	4.66 to 13.9	Naturally present in the environment
Disinfection By-products								
5/31/16	Bromate	No	6	ppm	N/A	N/A	ND to 6.8	N/A

2016 TEST RESULTS OF "DETECTED" REGULATED CONTAMINANTS (CONT.)
Results provided by City of Fargo for the area of Cass Rural Water District Fargo
Please see your specific table below for your lead, copper, TTHM and HAA5 results.

Date	Contaminant	Violation Yes/No	Level Detected	Unit of Measure	MCLG	MCL	Range of Detection	Likely Source of Contamination
Stage 2 Disinfection By-products (HAA5/TTHM)								
12/31/16	HAA5	No	14	ppb	N/A	60	2.92 to 18.45	By-product of drinking water chlorination
6/30/16	TTHM	No	20	ppb	N/A	80	2.28 to 15.42	By-product of drinking water chlorination

Surface water treatment rule monitoring data:

Lowest monthly percentage of samples meeting turbidity limits = 99.5
Highest single measurement = 0.336

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

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

Although filtration removes Cryptosporidium, the most common filtration methods cannot guarantee 100% removal. In April 2015, the City of Fargo began a third round of monthly testing of our source water for the presence of Cryptosporidium. After two years of source water monitoring required under the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), the results of the 24 samples analyzed indicated an average of 0.095 oocysts per liter in the City of Fargo's source water (not the finished drinking water). This concentration of Cryptosporidium falls into the second lowest of four levels of treatment, requiring lower individual and combined filter effluent turbidity thresholds. A filter to waste feature will be added to the treatment process to help meet this requirement.

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. Should you have any questions, please contact our office.

As you can see by the tables, our system had **no** violations. We are proud that your drinking water meets or exceeds all federal and state requirements. We have learned through our monitoring and testing that some contaminants have been detected. The EPA has determined that your water IS SAFE at these levels. As you read the enclosed tables please note there are three tables of results – one for each phase. Read corresponding results for the phase you are in. You can request additional copies by calling 701-428-3139.

We at Cass Rural Water work around the clock to provide top-quality water to every tap. We ask that all our customers help us protect our water sources, which are an important part of our way of life and our children's futures. Thank you for taking the time to read this important report.

Arsenic – While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Lead – 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. Cass Rural Water District 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 two 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.*

Nitrate – Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. Infants below the age of six months of age who drink water containing Nitrate in excess of 10 ppm water can become seriously ill and, if left untreated, may die. Symptoms include shortness of breath and "blue baby syndrome." Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider.