2016 Annual Drinking Water Quality Report
City of Sandusky Municipal Water System
January 18th 2017

We're pleased to present to you this year's Annual Quality Water Report. This report is designed to inform you about the quality of the water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Our water source consists of four (4) active wells drawing from the Marshall Sandstone Aquifer; Wells are as deep as 137 to 172 feet.

We're also pleased to report that our drinking water meets federal and state requirements, if you have any questions about this report or concerning your water utility, please contact Matthew Harris at 810-648-4641. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled City Council meetings, they are held on the 1st and 3rd Mondays of the month, 5:30 PM at the Sandusky City Hall, 26 W. Speaker Street.

The City of Sandusky Municipal Water System routinely monitors for contaminants in your drinking water according to Federal and State laws. This table shows the results of our monitoring for the period of January 1st to December 31st, 2016**.** As water travels over the land or underground, it can pick up substances or contaminants such as microbes, inorganic and organic chemicals, and radioactive substances. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk.

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

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:
Microbial contaminants such as; viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

1.) 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.
2.) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.
3.) 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.
4.) Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

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

Average (Avg) - A running average of all samples collected during the reporting period.

Running Annual Average (RRA) A Running Annual Average is the sum of all samples collected during the year divided by the number of sampling periods, such as quarterly.

Maximum (Max) - The maximum value of all samples used to calculate the Average. This is the upper part of the range of sample values.

Minimum (Min) - The minimum value of all samples used to calculate the Average. This is the lower part of the range of sample values.

Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l) - 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 - one part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

picocuries per Liter (pCi/L)

Action Level (Al) - the concentration of a contaminant, which, if exceeded, triggers treatment or other requirements, which a water system must follow.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level (MCL) - The "Maximum Allowed" is the highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) - The "Goal" is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

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.

Maximum Residual Disinfectant Level Goal (MRDLG) – The level of a drinking water disinfectant below which there is no known of expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.

TEST RESULTS						
Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	MCL	Likely Source of Contamination
Inorganic Regulated Chemicals						
1. Arsenic Most recent analysis performed 12/7/16	N	ND	ppb	0	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
2. Barium Most recent analysis performed 9/14/12	N	0.07	ppm	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
3. Copper 90th Percentile Most recent analysis 8/18/2015	N	0.88	ppm	1.3	AL=1300	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
4. Fluoride Most recent analysis 3/9/16	N	0.64	ppm	4	4	Erosion of natural deposits; water additive which promotes strong teeth
5. Lead 90th Percentile Most recent analysis 8/18/2015	N	ND	ppm	0	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
6. Nitrate (as Nitrogen) Most recent 3/9/16	N	ND	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
7. Nitrite Most recent 3/9/16	N	ND	ppm	1	1	Runoff from fertilizer use, leaching from septic tanks, sewage, erosion of natural deposits.
Radioactive Contaminants						
7. Alpha Emitters Most recent 9/19/13	N	3.0	PCi/L	0	15	Erosion of Natural Deposits
8. Radium (combined 226/228) Most recent 6/8/16	N	<1	PCi/L	0	5	Erosion of natural Deposits
Un-Regulated Chemicals						
9. Sulfate Most recent 3/9/16	N	79	ppm			Natural occurring element in water supply.
10. Chloride Most recent 3/9/16	N	145	ppm	MRDLG = 4	MRDL = 4	Natural occurring element in water supply.
11. Sodium Most recent 3/9/16	N	84	ppm			Natural occurring element in water supply.
12. Iron Most recent 3/9/16	N	ND-0.9	ppm			Natural occurring in water supply
13. Hardness as CaCO3 Most recent 3/9/16	N	445	ppm			Natural 0ccuring
Stage 2 Disinfectant By-Products Total Trihalomethanes and Haloacetic Acid 5						
14. TTHM (Total Trihalomethanes) Most Recent 7/20/16*	N	0.0317	ppm	N/A	0.80	By-product of drinking water disinfection
15. HAA5 (Total Haloacetic Acid) Most Recent 7/20/16*	N	0.002	ppb	N/A	60	By-product of drinking water disinfection

*Samples taken for disinfection bi products on July 20 2016 were taken at the incorrect locations and cannot counted. Samples will be retaken in July 2017. There is no threat to our water supply. Please see attached posting.

Note: Lead and Copper samples tested did not exceed the regulated Action Levels for the 90th Percentile.

Note: Bacteriological samples taken each month have come back from the Lab as negative (absent) samples, showing there is a zero (0) reported reading. Bacteriological samples, not a health threat in itself; are used to indicate whether other potentially harmful bacteria may be present and none were.

Note: You will notice that some samples were not taken for some of the contaminants in 2016. This is because those samples are required to be done once every three years or more, depending on the schedule given to us by the Michigan Department of Environmental Quality (MDEQ).

Contaminants	Susceptible Vulnerable SubPopulation	Level of Concern
Fecal Coliform/E. Coli	Infants, young children, and people with severely compromised immune systems	Confirmed presence (any confirmed detect)
Copper	People with Wilson's Disease	1.3 mg/l (ppm)
Fluoride	Children	4.0 mg/l (ppm)
Lead	Infants and children	15.0 mg/l (ppm)
Nitrate	Infants below the age of 6 months.	10.0 mg/l (ppm)
Nitrite	Infants below the age of 6 months	1.0 mg/l (ppm)

"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 Sandusky 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."

February 2016 Boil Water Notice

On February 4 the city had a major water main break on the corner of East Sanilac Ave. and South Jackson that made the south east quadrant lose pressure/water for a period of time. The city was able to establish water again to the South east area except for affected areas 2 blocks north of 46 on North Jackson St. and one block south of 46 on South Jackson St. who was without water for around 20hrs. Bottled water was handed out. The Boil water notice was put in effect for the South East Area Only once water was restored. The DEQ was notified of the event and the boil notice was mandatory since water pressure dropped below 20psi.
Once the break was fixed everyone regained water and sampling started. A total of 8 bacteriological samples were taken. 2 north of 46 in the affected area and 6 samples taken in the south east area. Repeat samples were taken the following day and the boil water notice was lifted around 8:00 Monday morning on Feb 8 2016.

The State of Michigan has produced a Source Water Assessment for the City's Wells. This Assessment reports the susceptibility of our water supply sources to contamination. The susceptibility score is broken down into seven (7) categories. Very Low, Low, Moderately Low, Moderate, Moderately High, and Very High. The score given by the State,, for Well # 1 is Moderately High, Well # 3 is High, Well # 6 is Moderately High, Well # 7 is Moderately Low, Well # 9 is Moderately High. The complete Source Water Assessment is available by contacting the Water department.
What does this report mean?
All sources of drinking water are subject to potential contamination by substances that are naturally occurring or manmade. These substances can be microbes, inorganic or organic chemicals and radioactive substances. All 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 the 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 at 1-800-426-4791.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 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.

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 microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Please call our office, at 810-648-4444, if you have questions or wish a copy of this report. Copies of this report results will also be made available at the Sandusky City Hall. The staff of the City of Sandusky work very hard each and every day of the year to provide top quality water to every tap. We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future.