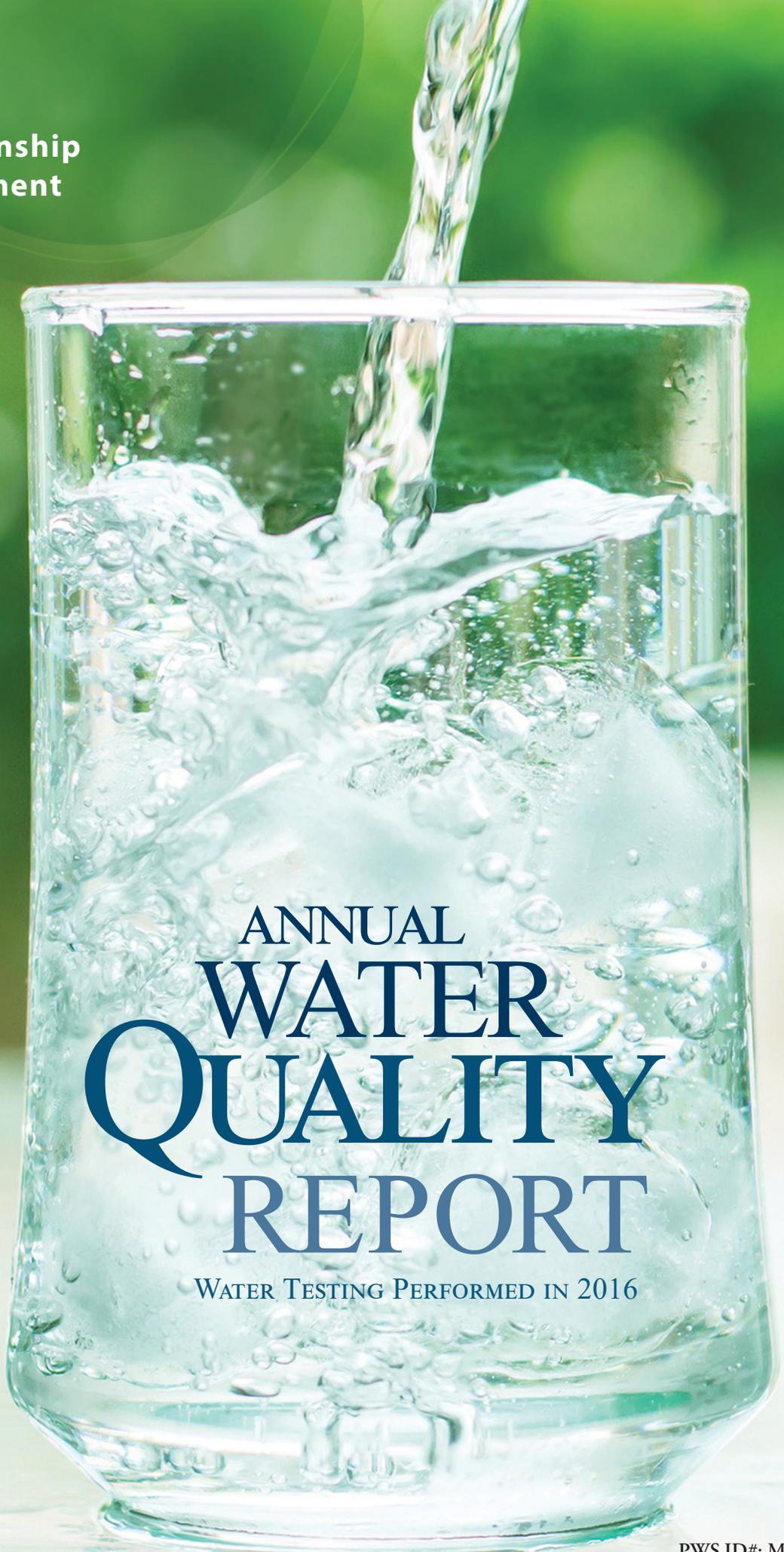


Presented By  
Plainfield Township  
Water Department



ANNUAL  
WATER  
QUALITY  
REPORT

WATER TESTING PERFORMED IN 2016

## We've Come a Long Way

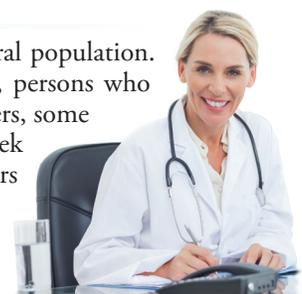
Once again we are proud to present our annual water quality report covering the period between January 1 and December 31, 2016. In a matter of only a few decades, drinking water has become exponentially safer and more reliable than at any other point in human history. Our exceptional staff continues to work hard every day—at any hour—to deliver the highest quality drinking water without interruption. Although the challenges ahead are many, we feel that by relentlessly investing in customer outreach and education, new treatment technologies, system upgrades, and training, the payoff will be reliable, high-quality tap water delivered to you and your family.

## Lead in Home Plumbing

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. We are 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 [www.epa.gov/lead](http://www.epa.gov/lead).

## Important Health Information

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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



## Where Does My Water Come From?

Plainfield Township Water Department customers enjoy an abundant water supply from 11 wells located in two separate well fields. The Water Treatment Plant, due to an abundance of caution, no longer draws water from five wells in the Versluis well field East of Northland Drive, as a result of the discovery of unregulated contaminants called PFOAs found in 2013. The EPA has issued a health advisory for these contaminants of 70 parts per trillion. We have never exceeded this health advisory. The East well field near the Treatment Plant, has three submersibles and three collector wells, and the West well field, also near the plant, has five wells that make up our raw water supply. The Township is in the process of seeking a new well field to make up for the shutdown of the five Versluis wells. The Water Treatment Plant was originally constructed in 1963 and expanded over the years to draw from this underground water supply that is constantly being resupplied with water from rain and upgradient aquifer flow. For the year 2016, the Water Treatment Plant supplied 1.392 billion gallons of water to roughly 40,000 customers. Our maximum day pumpage was 8.24 million gallons. The minimum day pumpage was 1.37 million gallons. Our average day was calculated to be 3.90 million gallons.

In the water distribution system there are more than 200 miles of water main, more than 9,000 water meters, and more than 2,000 valves and hydrants, respectively. There are 14 elevated and ground water storage tanks in the system ranging from 200,000 gallons to 4 million gallons' capacity. Our total water tank storage capacity is 14.1 million gallons of water. These tanks provide pressure as well as water for fire protection. Five pump stations move water to our tanks and four pressure districts. We provide water to Plainfield Township, Alpine Township, Grand Rapids Township, Algoma Township, and a small section in the City of Walker.

## Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration 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 these contaminants does not necessarily indicate that the water poses a health risk.

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, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances 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, or wildlife;

**Inorganic Contaminants**, such as salts and metals, which can be naturally occurring or may 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 may also come from gas stations, urban stormwater runoff, and septic systems;

**Radioactive Contaminants**, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

## Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. There are Township board meetings on the 2nd and 4th Mondays of each month beginning at 7:00 p.m. at Plainfield Township Hall, 6161 Belmont Ave., Belmont, Michigan 49306.

## Water Treatment Process

The treatment process consists of a series of steps. First, raw water is drawn from our well water source and sent to the treatment plant. The water then passes through a clarifier, where lime and alum are added. The addition of these substances cause small particles to adhere to one another (called "floc") making them heavy enough to settle. These small particles are made up of calcium and magnesium, which is commonly called hardness. The heavy hardness particles drop to the bottom of the clarifier and the sediment is removed by gravity to be drained. Chlorine and fluoride are added for disinfection and prevention of tooth decay. The clarified, softened water then flows by gravity to filters constructed with layers of fine silicate sand and anthracite coal. As water is pumped through these filters, smaller suspended particles are removed, and clear water emerges. All chemicals added to the water are carefully monitored, adding the lowest quantity necessary to protect the safety of your water without compromising taste. Finally, a corrosion inhibitor in the form of phosphate (used to protect distribution system pipes) is added before the water is pumped to ground storage reservoirs and elevated water tanks where gravity takes over to provide water under pressure to homes, schools, and businesses.

## QUESTIONS?

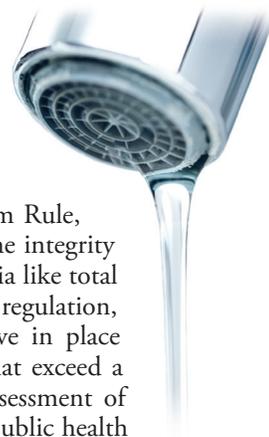
For more information about this report, or for any questions relating to your drinking water, please call Donald Petrovich, Water Treatment Plant Superintendent, at (616) 364-7174.

## Protecting Your Water

Bacteria are a natural and important part of our world. There are around 40 trillion bacteria living in each of us; without them, we would not be able to live healthy lives. Coliform bacteria are common in the environment and are generally not harmful themselves. The presence of this bacterial form in drinking water is a concern, however, because it indicates that the water may be contaminated with other organisms that can cause disease.

In 2016, the U.S. EPA passed a new regulation called the Revised Total Coliform Rule, which requires additional steps that water systems must take in order to ensure the integrity of the drinking water distribution system by monitoring for the presence of bacteria like total coliform and *E. coli*. The rule requires more stringent standards than the previous regulation, and it requires water systems that may be vulnerable to contamination to have in place procedures that will minimize the incidence of contamination. Water systems that exceed a specified frequency of total coliform occurrences are required to conduct an assessment of their system and correct any problems quickly. The U.S. EPA anticipates greater public health protection under the new regulation due to its more preventive approach to identifying and fixing problems that may affect public health.

Though we have been fortunate to have the highest-quality drinking water, our goal is to eliminate all potential pathways of contamination into our distribution system, and this new rule helps us to accomplish that goal.



## Source Water Assessment

A Source Water Assessment Plan (SWAP) is now available at our office. The State of Michigan performed this assessment of our source water in 2003. This plan is an assessment of the delineated area around our listed sources through which contaminants, if present, could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated area, and a determination of the water supply's susceptibility to contamination by the identified potential sources.

According to the Source Water Assessment Plan, our water system had a susceptibility rating of "high" due to the geological characteristics of the soils around our wells. The importance of protecting the Township's well fields cannot be overemphasized. If a release of pollutants occurs on the ground near our wells, it will travel very quickly toward these wells and the Grand River. We have enacted a Wellhead Protection Ordinance, and a map of the "Wellhead Protection Zone" can be viewed through the links located on the Township's website ([www.plainfieldmi.org](http://www.plainfieldmi.org)). We have no contamination violations, and our wells meet all standards for construction. If you would like to review the Source Water Assessment Plan, please feel free to contact our office during regular office hours.



## Test Results

Our water is monitored for many different kinds of contaminants on a very strict sampling schedule. The information below represents only those substances that were detected; our goal is to keep all detects below their respective maximum allowed levels. The State recommends monitoring for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

We participated in the 3rd stage of the EPA's Unregulated Contaminant Monitoring Rule (UCMR3) program by performing additional tests on our drinking water. UCMR3 benefits the environment and public health by providing the EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if EPA needs to introduce new regulatory standards to improve drinking water quality. Contact us for more information on this program.

### REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chlorine (ppm)	2016	[4]	[4]	0.78	0.27–1.14	No	Water additive used to control microbes
Combined Radium (pCi/L)	2015	5	0	1.66	1.66–1.66	No	Erosion of natural deposits
Fluoride (ppm)	2016	4	4	0.80	0.49–0.80	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Gross Alpha (pCi/L)	2015	15	NA	1.4	1.4–1.4	No	Erosion of natural deposits
Haloacetic Acids [HAA] (ppb)	2016	60	NA	16.4	7.2–26.7	No	By-product of drinking water disinfection
Nitrate (ppm)	2016	10	10	1.16	1.16–1.16	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] <sup>1</sup> (ppb)	2016	80	NA	85.0	48.5–104.0	Yes	By-product of drinking water disinfection
Total Organic Carbon (ppm)	2016	TT	NA	2.44	1.81–2.44	No	Naturally present in the environment
Turbidity <sup>2</sup> (NTU)	2016	TT	NA	0.08	0.05–0.08	No	Soil runoff
Turbidity (lowest monthly percent of samples meeting the limit)	2016	TT = 95% of samples <0.3 NTU	NA	100	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH% TILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2016	1.3	1.3	0.02	0/31	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2016	15	0	0	0/31	No	Corrosion of household plumbing systems; Erosion of natural deposits

## UNREGULATED AND OTHER SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Calcium (ppm)	2016	32	21–32	Naturally present in the ground water
Chloride (ppm)	2016	98.5	72.5–98.5	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Hardness (ppm)	2016	178	116–178	Naturally present in the ground water
Iron (ppm)	2016	0.032	0.032–0.032	Leaching from natural deposits; Industrial wastes
Magnesium (ppm)	2016	26	13–26	Naturally present in the ground water
Perfluorobutanesulfonic Acid [PFBS] (ppt)	2016	5.1	4.7–5.1	Consumer products such as Teflon, Scotch Guard, Stain Master, and firefighting foam
Perfluoroheptanoic Acid [PFHpA] (ppt)	2016	3.6	2.3–3.6	Consumer Products such as Teflon, Scotch Guard, Stain Master, and firefighting foam
Perfluorohexanesulfonic Acid [PFHxS] (ppt)	2016	3.1	2.4–3.1	Consumer products such as Teflon, Scotch Guard, Stain Master, and firefighting foam
Perfluorooctanesulfonate Acid [PFOS] (ppt)	2016	7.9	4.9–7.9	Consumer products such as Teflon, Scotch Guard, Stain Master, and fire fighting foam
Perfluorooctanoic Acid [PFOA] (ppt)	2016	2.6	2.1–2.6	Consumer products such as Teflon, Scotch Guard, Stain Master, and firefighting foams
Sodium (ppm)	2016	43.7	43.7–43.7	Naturally present in ground water
Sulfate (ppm)	2016	54.5	54.5–54.5	Naturally present in the ground water

<sup>1</sup> After efforts to lower THM levels, we are now in compliance.

<sup>2</sup> Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

## VIOLATION INFORMATION

TYPE	DURATION	DETAILS	ACTION TAKEN	HEALTH EFFECTS
The locational running annual average of TTHMs north of the Ten Mile elevated tank exceeded the MCL in October 2016	October 2016 to April 2017	The organic level in the raw water supply was unusually high. The reaction of chlorine to this organic load elevated the levels of trihalomethanes.	We have installed mechanical mixers in Kuttshill and Ten Mile tanks, stopped adding additional chlorine at the Childsdale pumping station, and instituted operational changes to lower water residence time in the distribution system.	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

## Definitions

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

**LRAA (Locational Running Annual Average):** The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for TTHMs and HAAs are reported as LRAAs.

**MCL (Maximum Contaminant Level):** 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.

**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.

**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.

**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.

**NA:** Not applicable

**NTU (Nephelometric Turbidity Units):** Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

**pCi/L (picocuries per liter):** A measure of radioactivity.

**ppb (parts per billion):** One part substance per billion parts water (or micrograms per liter).

**ppm (parts per million):** One part substance per million parts water (or milligrams per liter).

**ppt (parts per trillion):** One part substance per trillion parts water (or nanograms per liter).

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