



This report was prepared by:  
Plainfield Township Water Department  
5195 Plainfield Ave NE  
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## Meeting the Challenge

We are once again proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2011. Over the years we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please share with us your thoughts or concerns about the information in this report. After all, well-informed customers are our best allies.



For more information about this report, or for any questions relating to your drinking water, please call Donald Petrovich, Water Plant Superintendent, at (616) 364-7174, or e-mail [petrovichd@plainfieldchartertp.org](mailto:petrovichd@plainfieldchartertp.org)

## Community Participation

You are welcome to participate in our public forum and voice your concerns about your drinking water. We have board meetings the 1st and 3rd Monday of each month beginning at 7:30 PM at Town Hall, 6161 Belmont Ave., Belmont Michigan 49306.

## Where Does Plainfield water come from?

Plainfield Township Water Department gets its excellent quality raw water from sixteen wells located in three separate well fields. These wells vary in size, and can pump from 600 gallons of water per minute to 1450 gallons of water per minute, for a total raw water supply capacity of approximately 24 million gallons a day. This raw water supply is pumped to and treated by our 16 million gallon per day capacity water plant to meet every federal and state requirement for safe drinking water. In 2011 we supplied 1.26 billion gallons of safe, clean drinking water to our customers. Our minimum daily pumpage was 1.68 million gallons of water a day. Our maximum pumpage was 7.76 million gallons of water a day. Our average daily pumpage was 3.45 million gallons a day.

The water treatment plant is a full treatment, lime softening facility. In the water distribution system there are over 200 miles of water main, over 9,000 water meters, and over 2,000 valves and hydrants respectively. There are 14 water tanks ranging in capacity from 200,000 gallons to 4 million gallons of water. These tanks provide pressure and 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 part of the City of Walker.

## The Water Treatment Process

The water treatment process consists of a series of steps (source, treatment, distribution). First, raw water is drawn from an underground aquifer by wells and sent to the water treatment plant. The water then passes through a clarifier, where alum and lime 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 by gravity into a basin from which sediment is removed. Chlorine and fluoride are also added for disinfection and prevention of tooth decay. The clarified, softened water then falls by gravity to filters. At this point, the water is filtered through layers of fine coal, silicate sand, and a specially manufactured filter bottom. As smaller, suspended particles are removed, turbidity disappears and clear water emerges. All chemicals added 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.

## Substances That Could Be in Water

To ensure that tap water is safe to drink, 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 can acquire 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.

## Water Main Flushing

Distribution mains (pipes) convey water to homes, businesses, and hydrants in your neighborhood. The water entering distribution mains is of very high quality; however, water quality can deteriorate in areas of the distribution mains over time. Water main flushing is the process of cleaning the interior of water distribution mains by sending a rapid flow of water through the mains.

Flushing maintains water quality in several ways. For example, flushing removes sediments such as calcium and magnesium. Although calcium and magnesium do not pose health concerns, they can affect the taste, clarity, and color of the water. Additionally, sediments can shield microorganisms from the disinfecting power of chlorine, contributing to the growth of microorganisms within distribution mains. Flushing helps remove stale water and ensures the presence of fresh water with sufficient dissolved oxygen, disinfectant levels, and an acceptable taste and smell.

During flushing operations in your neighborhood, some short-term deterioration of water quality, though uncommon, is possible. You should avoid tap water for household uses at that time. If you do use the tap, allow your cold water to run for a few minutes at full velocity before use and avoid using hot water, to prevent sediment accumulation in your hot water tank.

Please contact us if you have any questions or if you would like more information on our water main flushing program.

## Source Water Assessment

A Source Water Assessment Plan (SWAP) is 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 it will travel very quickly toward the Township's wells and the Grand River. We have enacted a Wellhead Protection ordinance and a Zoning Overlay ordinance to help protect these wells. A brief summary along with the entire ordinance and a map of the "Wellhead Protection Zone" can be viewed through the links located on the Township's website ([www.plainfieldchartertwp.org](http://www.plainfieldchartertwp.org)). We have no contamination violations, our wells meet all standards for construction, and there have been no contamination incidents in our isolation areas. If you would like to review the Source Water Assessment Plan, please feel free to contact our office during regular office hours.

## Naturally Occurring Bacteria

The simple fact is, bacteria and other microorganisms inhabit our world. They can be found all around us: in our food; on our skin; in our bodies; and, in the air, soil, and water. Some are harmful to us and some are not. 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 because it indicates that the water may be contaminated with other organisms that can cause disease. Throughout the year, we tested many water samples for coliform bacteria. In that time, none of the samples came back positive for the bacteria. Federal regulations now require that public water that tests positive for coliform bacteria must be further analyzed for fecal coliform bacteria. Fecal coliform are present only in human and animal waste. Because these bacteria can cause illness, it is unacceptable for fecal coliform to be present in water at any concentration.

## 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/safewater/lead](http://www.epa.gov/safewater/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>.

## Information on the Internet

The U.S. EPA Office of Water ([www.epa.gov/watrhme](http://www.epa.gov/watrhme)) and the Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)) Web sites provide a substantial amount of information on many issues relating to water resources, water conservation and public health.

## Sampling Results

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. The state allows us to monitor 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.

REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2002	15	0	1.3	1.3–1.3	No	Erosion of natural deposits
Chlorine (ppm)	2011	[4]	[4]	0.75	0.23–1.22	No	Water additive used to control microbes
Combined Radium (pCi/L)	2002	5	0	0.9	0.9–0.9	No	Erosion of natural deposits
Fluoride (ppm)	2011	4	4	1.4	0.30–1.4	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] <sup>1</sup> (ppb)	2011	60	NA	14.1	6.1–22.4	No	By-product of drinking water disinfection
Nitrate (ppm)	2011	10	10	1.14	1.14–1.14	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] <sup>1</sup> (ppb)	2011	80	NA	57.9	35.0–83.4	No	By-product of drinking water disinfection
Total Coliform Bacteria (% positive samples)	2011	5% of monthly samples are positive	0	0	NA	No	Naturally present in the environment
Total Organic Carbon (ppm)	2011	TT	NA	2.0	1.46–2.0	No	Naturally present in the environment
Turbidity <sup>2</sup> (NTU)	2011	TT	NA	0.25	0.03–0.25	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2011	TT	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)	2010	1.3	1.3	0	0/31	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2010	15	0	0	0/31	No	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGULATED SUBSTANCES				
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Sodium (ppm)	2011	34.3	34.3–34.3	Erosion of natural deposits.
Sulfate (ppm)	2011	51.1	51.1–51.1	Naturally present in ground water

## OTHER UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Calcium (ppm)	2011	36.0	19.0–36.0	Naturally present in ground water
Chloride (ppm)	2011	94.0	68.0–94.0	Naturally present in ground water
Hardness (ppm)	2011	180.0	118.0–180.0	Naturally present in ground water
Iron (ppm)	2011	0.02	0.02–0.02	Naturally present in ground water
Magnesium (ppm)	2011	29.0	12.0–29.0	Naturally present in ground water

<sup>1</sup>Reported value based on the Running Annual Average (RAA)

<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.

We were required by the U.S. EPA to conduct an evaluation of our distribution system. This is known as an Initial Distribution System Evaluation (IDSE) and is intended to identify locations in our distribution system that have elevated disinfection by-product concentrations. Disinfection by-products (e.g., HAAs and TTHMs) result from continuous disinfection of drinking water and form when disinfectants combine with organic matter that naturally occurs in the source water.

## Definitions

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

**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

**ND (Not detected):** Indicates that the substance was not found by laboratory analysis.

**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).

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