

# 2007 DRINKING WATER QUALITY REPORT



## *Ann Arbor Public Services 2007 Annual Report on Drinking Water*



***The staff of Ann Arbor Public Services is strongly committed to bringing you the best drinking water possible. We take pride in not only meeting all federal and state drinking water regulations, but in reaching higher goals. We participate in voluntary programs which improve our organization and establish more stringent water quality goals. Our monitoring programs far exceed those required to assure the quality of your drinking water. The USEPA requires water utilities provide the following information to their customers as part of their Annual Water Quality Report. This information is generic and may or may not apply to Ann Arbor drinking water. If you have any questions on this language, you may contact the USEPA Safe Drinking Water Hotline at (800) 426-4791.***

## **Water Supply and Treatment**

The Ann Arbor water supply is comprised of both surface and ground water sources. About 85% of the water supply comes from the Huron River. The remaining 15% is from multiple wells located south of Ann Arbor. The water from both the sources is blended at the water treatment plant. Since we use a surface supply, (Huron River water), the United States Environmental Protection Agency (USEPA) and the Michigan Department of Environmental Quality (MDEQ) regulations require it to be treated, filtered and disinfected to ensure that any harmful substances are removed. When treatment is complete, the water is pumped to homes, schools and businesses in Ann Arbor as well as to Ann Arbor and Scio townships for resale to their customers.

***The following is the official USEPA language on Cryptosporidium:*** *Cryptosporidium is a protozoan parasite that is too small to be seen without a microscope. It is sometimes found in some surface waters, especially when the waters contain a high amount of fecal waste from run-off or other activities. Those who are infected with this parasite can experience gastrointestinal illness.*

*USEPA and the Centers for Disease Control have published guidelines on ways to reduce the risk of Cryptosporidium infection. The guidelines are available from the Safe Drinking Water Hotline at (800) 426-4791.*

Samples have been collected from the source and no detectable levels of Cryptosporidium were found.

***The following is the official USEPA language on contaminants that may be in untreated water:*** *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 and through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or from human activity.*

*Contaminants that might be expected to be in source water - untreated water - include: microbial contaminants, such as viruses and bacteria; inorganic contaminants, such as salts and metals; pesticides and herbicides; organic chemical contaminants; including synthetic and volatile organic chemicals; and radioactive contaminants, which can be naturally occurring.*

*In order to ensure tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. 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 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 Safe Drinking Water Hotline at (800) 426-4791.*

***The following is the official USEPA language on low resistance to infection:*** *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 from their health care providers. Environmental Protection Agency / Centers for Disease Control guidelines on appropriate means to lessen the risk of infection from Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.*

# Source Water Assessment and Protection Plan

The City of Ann Arbor has completed a Source Water Assessment and Protection Plan. This plan determines the protection areas for all of our sources of supply, assesses the potential for contamination and develops plans for improving protection of those areas. The assessments for both the river and groundwater supplies included determining the susceptibility, or relative potential of contamination impacting each source of supply. A six-tiered scale was used to rate the potential for contamination. The scale ranges from “very low” to “high”. The susceptibility rating is based on the geologic sensitivity and the number and types of potential contaminant sources located within our source water protection areas. The susceptibility of the Huron River supply was rated “high” and the wells were rated “moderate”.

Because we live in an urban setting, our source water is susceptible to contamination from both point (direct) and non-point (indirect) sources of pollution. However, since the inception of the Clean Water Act in 1977, there has been a steady decline in point source pollution in our river. Among other things, the Act set limits and permit requirements for public and private entities that directly discharge into our rivers, lakes and streams. These requirements have greatly reduced the amount of point source pollution entering our water bodies. The biggest threat to the Huron River supply now comes from non-point source pollution. When water from rain and snowmelt (“stormwater”) runs off a piece of property, it flows directly to the Huron River or through a storm drain system which then carries it to the Huron River. As the water travels towards the river, it picks up pollutants such as oil and grease from vehicles, road salt, pet waste, dirt and fertilizer. All of these pollutants affect the water quality in the Huron and can have a significant impact on the drinking water treatment process. For example, Phosphorous and other nutrients in fertilizers can cause an increase in nuisance aquatic vegetation and algal blooms, and sediments from runoff make the water turbid (cloudy). It is both costly and difficult to treat nutrient-rich and turbid water.



What is the city doing to reduce nonpoint source pollution?

The City is making efforts to protect our drinking water source from nonpoint source pollution. We routinely provide educational materials to all residents and businesses, and we have recently implemented a fertilizer ordinance. We also are working in our community and with upstream communities on stormwater education and methods of control.

## Frequently Asked Questions

### Has the city of Ann Arbor ever tested our water for pharmaceuticals and personal care products (PPCP)?

Yes. Through grants from the Michigan Department of Environmental Quality (MDEQ), in 2003 and 2005 the City completed studies to determine if these contaminants were present in our water. We tested both our source water and finished drinking water for the presence of 22 pharmaceutical and personal care products (PPCP): seven antibiotics; two analgesics; one anti-epileptic; nine hormones and stabilizers, as well as caffeine, a nicotine metabolite, and a solvent stabilizer. Of the 22 contaminants, 10 were found in the source water and four were detected in finished water. The four contaminants detected in the finished water are listed in the table below. All the contaminants were found in minute amounts, in parts per billion (ppb) or parts per trillion (ppt). You can visualize parts per billion as a half teaspoon of sugar in an Olympic-sized swimming pool.

Contaminant	Description	Concentration
Sitosterol	Plant steroid	0.800 ppb
Stigmasterol	Plant steroid	0.105 ppb
Cholesterol	Plant and animal steroid	0.640 ppb
Ibuprofen	NSAID*	1.8 ppt

\* nonsteroidal anti-inflammatory drug

In the 2005 follow up study, we tested for the presence of 22 PPCP, 11 of which were not included in the 2004 sampling pool. In addition to the four contaminants detected in the 2003 sampling pool. Ten contaminants were detected. In addition to the four contaminants detected in the 2003 study, two beta blockers (estrone and propranolol), four new hormones (17-b-estradiol, 17-a-ethinylestradiol, coprostanol and estriol), one anti-epileptic (carbamazepine), and caffeine were also detected in the parts per trillion range. Initial studies indicate that concentrations of these contaminants at these levels are not a human health risk, but more research is needed. The City of Ann Arbor continually monitors toxicological studies to determine if additional water testing is necessary.

To help prevent PPCPs from entering the drinking water supply, dispose of prescription and over-the-counter drugs correctly. Never flush any drugs down the toilet. For information on proper disposal of medication, or to read the City's PPCP study reports, please visit our webpage at:

[http://www.a2gov.org/government/publicservices/water\\_treatment](http://www.a2gov.org/government/publicservices/water_treatment)

### **Are meetings about the water system open to the public?**

Yes. The Public Services Area Administrator attends the Ann Arbor City Council meetings to provide information on the water system. All Council general sessions, the first and third Monday of each month, are open to the public. Unless announced otherwise, the meetings are at 7:00 PM in Council Chambers at City Hall, 100 North Fifth Avenue. Council meetings are also broadcast on cable channel 16, CTN. In addition, targeted public meetings are periodically held to discuss improvements and to listen to our citizens' and customers' concerns.



### **What is the City of Ann Arbor doing to protect its drinking water supply?**

The City of Ann Arbor Water Treatment Plant conducts extensive routine monitoring of water quality. Our testing program far exceeds current regulatory requirements and we are vigilant against potential threats to our water system. In addition, we have taken steps to enhance the physical security of our water system. We are following recommendations made by our local police, our state regulatory agency, the American Water Works Association and others. We will continue to work 24 hours a day to protect the City of Ann Arbor and its customers from potential threats to its drinking water. Complying with the Bioterrorism Act of 2002, an extensive analysis and vulnerability assessment of your drinking water system was completed in March of 2003. As a result of this assessment, a number of recommendations have been implemented and additional items are currently underway.

## ***Construction Projects***

A new 600,000 gallon equalization basin and associated pump station is near completion. This work is necessary to comply with a rule published by the USEPA on June 8, 2001 called the Filter Backwash Recycle Rule. The equalization basin and pump station will allow the Water Treatment Plant to reduce the return rate of filter backwash water and other recycle streams back into the treatment process. This modification to the treatment process will minimize fluctuations in the flow through the plant thus improving treatment. This project is projected to be complete in May 2008 and is on schedule.



# Water Quality Test Results

The following regulated substances were detected in some samples.

Please note that some substances, such as monochloramine and fluoride, are added to the water to improve health. All the detected substances are well within stringent Federal and State limits.

Definitions: The following tables contain scientific terms and measures, some of which may require explanation.

- **Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the Maximum Contaminant Level Goal as feasible using the best available treatment technology.
- **Maximum Contaminant Level Goal (MCLG):** 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.
- **mg/l:** milligrams per liter or parts per million - or one ounce in 7,350 gallons of water
- **µg/l:** micrograms per liter or parts per billion - or one ounce in 7,350,000 gallons of water
- **na:** not applicable
- **Avg:** Regulatory compliance with some MCLs are based on running annual average of monthly or quarterly samples.

## Regulated at the Water Treatment Plant

Regulated Substance	Highest Level Detected	Range of Individual Samples	MCL	MCLG	Source of Contamination
Fluoride	0.91 mg/l	0.89 – 0.91 mg/l	4 mg/l	4 mg/l	Added to water to promote strong teeth. Erosion of natural deposits. Discharge from fertilizer factories.
Nitrate	0.75 mg/l	0.27 – 0.75 mg/l	10 mg/l	10 mg/l	Run-off from fertilizer use. Leaching from septic tanks and sewage. Erosion of natural deposits.
Nitrite	39 µg/l	3 – 39 µg/l	1000 µg/l	1000 µg/l	Run-off from fertilizer use. Leaching from septic tanks and sewage. Erosion of natural deposits.
Bromate	6.0 µg/l avg	0 – 6 µg/l	10 µg/l	0 µg/l	By-product of ozone disinfection of drinking water.
Total Organic Carbon	47.4% Removal <sup>1</sup>	34–65% Removal	<25% Removal (TT)	na	Naturally occurring
Arsenic	0 µg/l	0 µg/l	10.0 µg/l	0 µg/l	Erosion of natural deposits
Barium	19 µg/l	0 – 19 µg/l	2000 µg/l	2000 µg/l	Erosion of natural deposits
Chromium	2.1 µg/l	0–2.1 µg/l	100 µg/l	100 µg/l	Erosion of natural deposits

<sup>1</sup>Poorest removal corresponds to highest concentration

## Monochloramine - Regulated at the Distribution System

Definitions:

- **Maximum Residual Disinfectant Level (MRDL):** The highest level of disinfectant allowed in drinking water.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of disinfectant in drinking water below which there is no known or expected risk to health. MRDLG's allow for a margin of safety.

Regulated Substance	Highest Level Detected	Range of Individual Samples	MRDL	MRDLG	Source of Contamination
Monochloramine	2.6 mg/l avg	0.9 – 3.7 mg/l	4 mg/l	4 mg/l	Disinfectant added at Water Plant

## Turbidity - Regulated at the Water Treatment Plant

Definitions:

- **Turbidity:** A measure of cloudiness of water. The Ann Arbor Water Treatment staff monitors it because it is a good indicator of the effectiveness of the filtration system. Turbidity must be less than 0.3 NTU in at least 95% of the measurements taken throughout each month. It must never exceed 1.0 NTU.
- **Nephelometric Turbidity Unit (NTU):** A measure of light scattered from particles in the water.
- **Treatment Technique (TT):** A process intended to reduce the level of a contaminant in drinking water.

Regulated Element	95th Percentile TT achieved (max)	95th Percentile TT required	95th Percentile TT voluntary goal	Lowest % of samples within requirements	Single highest measurement	Source of Contamination
Turbidity	0.12 NTU	0.3 NTU	0.1 NTU	0	0.34 NTU	Soil Runoff

# Water Quality Test Results

The following regulated substances were detected in some samples.

**Copper and Lead - Regulated at the Customer's Tap** - All samples collected and analyzed were well within the strict Federal and State limits. The data is from the 2005 testing conducted in accordance with regulations. 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 Ann Arbor 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>. The City of Ann Arbor sampled 56 homes and none of these homes exceeded the action level for lead or copper.

**Definitions:**

- **Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Action Level Goal (ALG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. ALG's allow for a margin of safety.

Regulated Substance	Detection Level at the 96th Percentile	AL	ALG	Source of Contamination
Copper - 2005 Customers plumbing	80 µg/l	1300 µg/l	1300 µg/l	Corrosion of household plumbing systems Erosion of natural deposits
Lead - 2005 Customers plumbing	3 µg/l	15 µg/l	0 µg/l	Corrosion of household plumbing systems Erosion of natural deposits

**Regulated in the Distribution System**

Regulated Substance	Highest Level Detected	Range of Individual Samples	MCL	MCLG	Source of Contamination
Total Coliform	Detected in 0.64% of all samples taken in August	0 – 0.64%	Detected in not more than 5% of samples taken monthly	0	Naturally occurring in the environment
Total Trihalomethanes	<sup>1</sup> 18 µg/l avg	1.9 – 61 µg/l	80 µg/l	0 µg/l	By-product of drinking water disinfection
Total Haloacetic Acids	<sup>1</sup> 13 µg/l avg	1.4 – 39.7 µg/l	60 µg/l	0 µg/l	By-product of drinking water disinfection

<sup>1</sup> Highest running annual average of last four quarters

**These tests also showed the following characteristics in our water. Federal and State standards have yet to be established and all results are within limits accepted by most public health officials.**

Non-regulated Substance	Average	Range of Individual Samples	Source of Contamination
Hardness	154 mg/l	118 – 202 mg/l	Naturally occurring minerals; controlled by water treatment process
pH	9.3	9.0 – 9.5	Controlled by water treatment process
Aldehydes	8 µg/l	0 – 33 µg/l	By-product of drinking water ozonation
Ammonia	0.14 mg/l	0.07 – 0.25 mg/l	Naturally occurring, added to water to form disinfectant
Methyl t-butyl ether (MTBE)	0 µg/l	0 µg/l	Gasoline additive
1,4-Dioxane	0 µg/l	0 µg/l	Groundwater contamination from manufacturing process and landfills
Perchlorate	0 µg/l	0 µg/l	Groundwater contamination from manufacturing process

# Water Quality Test Results

## UCMR - Unregulated Contaminants Monitoring Results

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

Unregulated Contaminant	Average	Range of Individual Samples	Source of Contamination
Sodium	57 mg/l	44 – 70 mg/l	Naturally occurring minerals; run-off of road salt into surface water; caustic soda used in water treatment process; bleach used in water treatment process

## Additional Information & Contacts

### Customer Service and Billing Information:

Customer Service Center  
100 North Fifth Avenue  
Ann Arbor, Michigan 48107

### Water Quality and Treatment:

Water Treatment Services  
919 Sunset Road  
Ann Arbor, Michigan 48103  
(734) 996-3275

email: [water@a2gov.org](mailto:water@a2gov.org)

<http://www.a2gov.org/government/publicservices>



### Notice of Violations

We monitor your drinking water for specific contaminants on a regular basis as required by the USEPA and MDEQ. In addition to all required testing, we voluntarily monitor more frequently and for many additional potential contaminants. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. No violations occurred in 2007.

**AFTER HOURS EMERGENCY: (734) 994-2840**

The Water Treatment Services Unit is staffed 24 hours per day. In the event of emergencies such as water main breaks, emergency water turn-offs and sanitary or storm sewer back-ups, please call the City of Ann Arbor Water Treatment Services Unit.



***City of Ann Arbor  
Water Treatment Services***

***919 Sunset Rd.  
Ann Arbor, MI 48103  
(734)-994-2840***

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