

City of Ames 2005 Water Quality Report



May the Source be with you!

Scientists are exploring new frontiers in their search for life. Recent missions to Mars have had one main objective; to find evidence of water. Nothing in our world has been shown to be as reliable an indicator for the presence of life as water. From space, our planet has shades of blue and white due to the abundance of water in its various forms. Water is the catalyst of life and one of the most critical substances for humans.

Our Water—A Limited Resource

As important as fresh water is for humans, it is a limited resource. Only about 0.25% of the water on earth is available for drinking, agriculture, and industry. Nearly 99.75% of the water on earth is either salty (mostly in the oceans) or locked up as ice (mostly in the polar ice caps). Ames is fortunate to have a reliable drinking water source in groundwater aquifers. The water in Ames' aquifers flows through the remnants of ancient riverbeds of Squaw Creek and South Skunk River, as they existed before the most recent glaciers. The City of Ames uses 19 wells to pump water from the sand and gravel of these ancient riverbeds and deliver it to the Water Treatment Plant.

Source Water Management

Although groundwater is somewhat protected by glacial deposits from the worst effects of drought and contamination, the City of Ames takes steps to ensure that the aquifer will be able to meet Ames' water needs. The construction of a low-head dam completed in 1984 and the development of Ada Hayden Heritage Park in 2003 are two important components of the Ames source water management plan for the Ames water utility. In the event of

an extended drought, water from the lakes at Ada Hayden Heritage Park and Peterson Pits can be pumped into the South Skunk River. There, it pools behind the low-head dam to provide a recharge source for the city's downtown wells.



The low-head dam aids in recharging the downtown aquifer.

Water Quality in Ames

The Iowa Department of Natural Resources (IDNR) recently completed a source water evaluation for Ames. The evaluation determined that Ames' groundwater has the potential to be contaminated by leaking underground storage tanks, landfills, or improper hazardous waste disposal. It is important to note that all drinking water sources (both bottled and tap) have a potential for contamination. As water travels over the surface or through the ground, it dissolves naturally occurring minerals and, in some

cases, radioactive material. Also, it can pick up substances resulting from human and animal activity. The City of Ames works diligently to ensure that contamination does not impact Ames' water supply. Interested citizens can view the IDNR source water evaluation on the internet at

<http://www.cityofames.org/waterweb> or purchase a copy at the City of Ames Water Plant, 300 East 5th Street, Ames, Iowa.

Protecting Ames Water Sources

Watershed protection is another way to protect Ames' water source. Ames has been encouraging watershed protection for many years. The Ada

Hayden Heritage Park project includes constructed wetlands and prairie restoration with a goal of water quality protection. Ames citizens can help by minimizing the chemicals used on lawns and gardens and practicing water conservation. Ames has safe, great tasting drinking water. Let's work to make sure the source is protected and kept clean for the future!



May the Source be with you!



The table to the right lists drinking water testing results for Ames' water within the past five years. The items listed were the only ones detected from a monitoring list of more than 80 regulated substances and several unregulated ones. Trained personnel evaluate source water, water undergoing treatment, and finished water from homes, schools and businesses throughout the City using state-of-the-art instrumentation. Other tests are performed by the State Hygienic Lab in Iowa City and private testing laboratories.

Substances that the water is tested for may be divided into five basic groups.



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



Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, and 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 runoff, urban stormwater runoff, and septic systems.



Radioactive contaminants, which occur naturally or result from oil and gas production and mining activities.

Terms to Know

Regulated substances have **Maximum Contaminant Levels (MCLs)** set by the EPA. This is the highest level of a contaminant that is allowed in drinking water. Some contaminants have **MCL Goals (MCLGs)**. This is the level of a substance where there is no known or expected health risk. MCLGs allow for a margin of safety. MCLs are set as close to MCLGs as feasible using the best available water treatment process. **Unregulated substances** do not have established MCLs but are monitored regularly. If an unacceptable amount of any substance is ever found in our water, the City of Ames will notify residents immediately and take corrective action to eliminate the problem. The MCL for lead and copper is known as the **Action Level (AL)**, the concentration which, if exceeded, notification and notices, may also be required.

ND: not detected
ppm: parts per million, same as milligrams per liter

pCi/L: picoCuries per liter, a measure of radioactivity
NTU: nephelometric turbidity units

ppb: parts per billion, same as micrograms per liter
TT: value determined by available treatment technology

Ames Water Passes the Test

Substance (units)	Test Date	No. of Samples Tested	Highest Allowed Level (MCL)	Highest Level Detected	Lowest Level Detected	Ideal Goal (MCLG)	Typical Source of Substance
Detected Substances Regulated Prior to Distribution							
cis-1,2-Dichloroethylene (ppb)	2001	2	70	0.5	ND	<70	Discharge from industrial chemical factories
Tetrachloroethylene (ppb)	2001	2	5	0.6	ND	0	Leaching from PVC pipes; discharge from factories and dry cleaners
Trichloroethene (ppb)	2001	2	5	1.1	ND	0	Discharge from metal degreasing sites and other factories
Combined radium (pCi/L)	2002	2	5	2.7	ND	0	Erosion of natural deposits
Arsenic (ppb)	2003	2	50	1	ND	0	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium (ppm)	2003	2	2	0.06	ND	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits; hospital wastes
Fluoride (ppm)	2004	1169	4	1.09	0.24	<4	Additive; natural deposits
Turbidity (NTU)	2004	489	TT	0.36	0.01	---	Soil runoff; lime addition
Detected Substances Regulated in the Distribution System							
Total Trihalomethanes (ppb)	2004	4	80	1.1	0.8	NA	By-product of drinking water disinfection
Total Haloacetic Acid [HAA5] (ppb)	2004	4	60	2	ND	0	By-product of drinking water disinfection
Nitrate (as N) (ppm)	2004	2	10	ND	ND	10	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Total Coliform	2004	693	Found in <5% of samples per month	2% positive per month	ND	Found in no samples	Naturally present in the environment
Unregulated Detected Substances							
Chlorate (ppm)	2004	4	---	ND	ND	---	By-product of drinking water disinfection
Sodium (ppm)	2003	2	---	33	22	---	Erosion of natural deposits
Potassium (ppm)	2001	1	---	2	2	---	Erosion of natural deposits
Substances Regulated at the Customers' Tap							
Substance (unit)	Test Date	No. of Samples Tested	AL: 90% of Samples Must be Below this Level	No. of Samples over AL	90% of Samples Were below this Level		Typical Source of Substance
Lead (ppb)	2004	38	15	0	ND		Corrosion of household plumbing systems
Copper (ppm)	2004	38	1.3	0	0.05		Corrosion of household plumbing systems



Drinking Water Regulations

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency adopts regulations that limit 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 that must provide similar 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 tap 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).



Arsenic and Radon

Arsenic has been a widely discussed water issue for several years. The federal rules recently lowered the allowable limit of arsenic from 50 to 10 parts per billion (ppb). Ames water already meets the new standard.

Radon is a radioactive gas that occurs naturally in groundwater in our geographic region. It can enter homes through the foundation or be released from tap water during normal household use. Ames residents are fortunate to have a water source that is naturally low in radon. Recent tests of Ames water found radon levels far below the limits being considered by EPA.



Special Health Concerns

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 people, and infants, can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline (800-426-4791).



Water Treatment Processes

Americans take clean, safe, and affordable water for granted—with good reason. The United States has some of the best public water supplies in the world. To make this happen, trained professionals work 24 hours a day to provide you with the best possible water.



Ada Hayden Heritage Park

The City of Ames purchased 437 acres of land surrounding and including an abandoned gravel quarry in north

Ames. The lake, which totals 1.2 billion gallons of water, serves the community by augmenting streamflow and groundwater recharge during drought conditions. To ensure water quality, wetlands have been constructed; and prairie grasses will be planted to filter inflow into the lake.

According to ISU researchers, water quality in Ada Hayden Heritage Park is some of the best surface water remaining in Iowa. However, the surrounding land use and erosion of the shoreline was degrading the quality of the water. By protecting the 437 acres of land and lake, this water source will be secure; and the area will be available for public access as an added benefit.

<http://www.city.ames.ia.us/parkrecweb/AdaHaydenHeritagePark.htm>



From the Well

The Ames Water Plant provides treatment to ensure a safe, palatable supply of drinking water for its customers. Have you ever wondered how the underground water supply gets to you? It all begins when well water enters the treatment plant through an aerator. This vents gases to the atmosphere that would contribute undesirable taste and odor and interfere with later treatment steps.



Water Treatment Plant

The water then flows into mixing tanks where lime is added to raise the pH. The lime forms solid particles by combining with calcium and magnesium, minerals that contribute to hardness. At this point, sodium hypochlorite is added to disinfect the water, and a polymer is added to enhance settling.



Pump Station

The water then travels to the clarifiers, where the insoluble calcium and magnesium particles settle to the bottom. These residuals, commonly known as lime sludge, flow to a lagoon and are allowed to dry. The solids are then applied to farm fields as a soil conditioner.

After clarification, polyphosphate is added to stabilize the water and reduce scale build-up on the filters. Next, the water enters the recarbonation tanks where carbon dioxide gas is bubbled through the water to stop the softening reaction. From the recarbonation tanks, the water is filtered through beds of anthracite coal and sand. These filters remove fine suspended particles.



Elevated Tank

Finally, fluoride is added to the water for dental protection just prior to distribution to the community.



To You!

Contact Us!

Ames Water Plant

300 East 5th Street

For quality or treatment questions:

515-239-5150

Public Works Operations

For water distribution questions:

515-239-5550

Customer Billing

515-239-5120

By E-mail:

ppropes@city.ames.ia.us



Water on the Web

www.cityofames.org/waterweb

www.epa.gov/safewater

www.iowadnr.gov

Este informe contiene informacion muy importante sobre la calidad de su agua beber. Traduscalo o hable con alguien que lo entienda bien.

The Ames City Council is the governing body that oversees the Ames water system. Bring your ideas to the public forums at the City Council meetings, which are normally held at 7:00 pm on the second and fourth Tuesdays of each month in the City Council Chambers at 515 Clark Avenue.