

2009

Water Quality Report for City of Chelsea

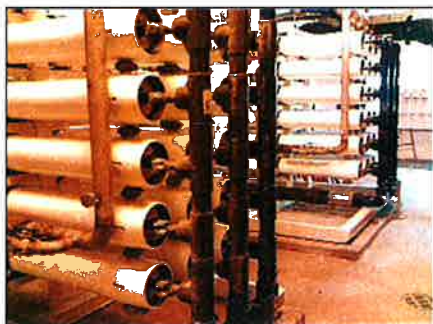
Once again the City of Chelsea Water Department is pleased to submit the drinking water quality report for the 2009 calendar year. This information is a snapshot of the quality of the water that we provided to you in 2009. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards.



At present your tap water comes from five wells. The oldest two wells are approximately forty feet deep, and the newest ones well 6 and 7 drilled in January 2007 are approximately 50 feet deep. The oldest of the five wells, well number 1 was drilled in 1941, following that was well 1A in 1952, well 5 was drilled in 2000. These wells are what are commonly called "drift wells", meaning that they are terminated in the glacial drift as opposed to being a rock well, which is set

in the bedrock below the drift. The wells are in a gravel formation with a screen to allow water to pass through while keeping the sand and gravel from entering the pump.

The water from the five wells is pumped to the treatment plant where it moves through the aerators to oxidize the iron and manganese. After some detention time the water



passes through the iron/manganese removal filters where the iron and manganese is removed. Once the water has passed through the iron removal filters it enters the membrane softening units. A portion of the iron treated water is diverted past the membrane softening equipment and blended with the softened water to balance the hardness and achieve a goal of 135 to 160 ppm or 7.9 to 9.35 gpg of hardness. The water then travels to the 200,000-gallon concrete ground storage tank at the facility.

On its way to the ground storage tank chlorine is applied. The chlorine is added as a disinfectant to prevent the presence of any bacteriological contamination in the ground storage tank. As the water leaves the ground storage tank on its way to the elevated storage tower

additional chlorine is added to maintain disinfection within the distribution system.

Approximately 0.8 ppm of fluoride is added with the naturally occurring fluoride of 0.2 ppm for healthier teeth and bones. Also added is an ortho phosphate blend to help prevent the corrosion of residential plumbing and distribution system piping. The water is metered and the chemicals are weighed everyday to ensure proper chemical dosages.

Source Water Vulnerability Assessment:

Your water comes from 5 groundwater wells, each over 40 feet deep. The State performed an assessment of our source water to determine the susceptibility or the relative potential of contamination. The susceptibility rating is on a seven-tiered scale from "very-low" to "very-high" based on geologic sensitivity, well construction, water chemistry and contamination sources. Hydro geologic information from the delineation report has been reviewed to establish a geologic sensitivity for the production wells. The two production wells obtain groundwater from an aquifer that is characterized as "unconfined." Unconfined aquifers possess a "high" geologic sensitivity. The susceptibility of our source is "high." This study was based on wells 1 and 1A (prior to the drilling and implementation of well 5, 6 and 7.) A new delineation study is currently being conducted and will be available soon.

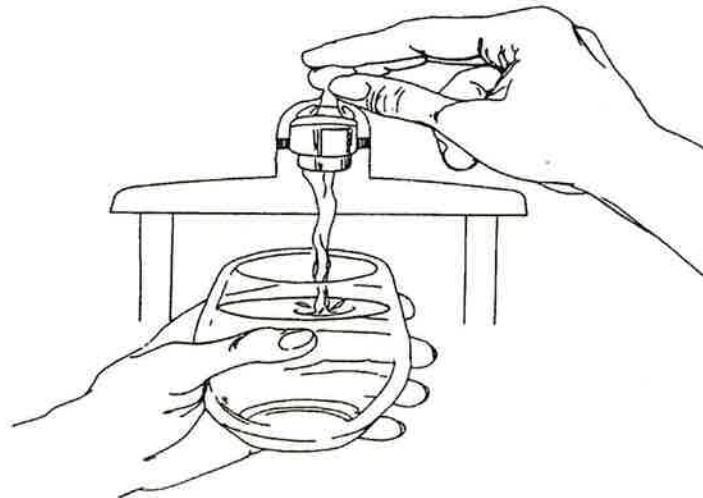
Potential sources of contamination include groundwater discharge permit sites; several small and large quantity hazardous waste generator sites; several Underground Storage Tank sites; and hazardous waste facilities. Abandoned wells provide a direct conduit for surface runoff and contaminants to easily reach the groundwater and may pose a potential problem. We are making efforts to protect our sources by conducting an active Wellhead Protection Program that supports management of existing or potential sources of contamination in the Wellhead Protection Program Area. Known sources of contamination within the WHPA are being re mediated to prevent movement of contamination to the municipal wells. If you currently have or know of a abandoned well, please notify the Water Department or your local health department for guidelines on the procedure to cap the well head.

If you would like to know more about the report, please contact Ray Schmidt or Corey Davis at the City of Chelsea Water Department at 734-475-8298.

Contaminants and their presence in water: 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's Safe Drinking Water Hotline (800-426-4791).

- **Sources of drinking water:** The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Our water comes from 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 include:**
 - ◆ **Microbial contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
 - ◆ **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.
 - ◆ **Pesticides and herbicides**, which may come from a variety of sources such as agriculture and residential uses.
 - ◆ **Radioactive contaminants**, which are naturally occurring or be the result of oil and gas production and mining activities.
 - ◆ **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.
- **Vulnerability of sub-populations:** 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 systems 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 microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

In order to ensure that tap water is safe to drink, EPA prescribes regulations that 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 provide the same protection for public health.



Water Quality Data

The table below lists all the drinking water contaminants that we detected during the 2009 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done January 1 – December 31, 2009. The State allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. All of the data is representative of the water quality, but some are more than one year old.

Terms and abbreviations used below:

- **Maximum Contaminant Level Goal (MCLG):** 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.
- **Maximum Contaminant Level (MCL):** 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.
- **Maximum Residual Disinfectant Level (MRDL):** means 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):** means 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.
- **N/A:** Not applicable **ND:** not detectable at testing limit **ppb:** parts per billion or micrograms per liter **ppm:** parts per million or milligrams per liter **pCi/L:** picocuries per liter (a measure of radioactivity).
- **Action Level:** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
- **Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water.

Regulated Contaminant	MCL	MCLG	Your Water	Range	Sample Date	Violation Yes / No	Typical Source of Contaminant
Arsenic (ppm)	0.01	0	0	NA	06/20/08	No	Erosion of natural deposits; pesticides and herbicides; glass and electronic production waste.
Fluoride (ppm)	4	4	1.2	NA	03/10/09	No	Erosion of natural deposits. Discharge from fertilizer and aluminum factories.
TTHM - Total Trihalomethanes (ppm)	0.08	N/A	0.01	NA	09/10/08	No	Byproduct of drinking water disinfection
Chlorine (ppm)	MRDL	MRDLG	0.73	0.14-1.22	Monthly	No	Water additive used to control microbes
	4	4					
Nitrate as N	10	10	ND	NA	03/10/09	No	Runoff from fertilizers, septic tanks, sewage treatment systems, erosion of natural deposits
Nitrite as N	1	1	ND	NA	03/10/09	No	Runoff from fertilizers, septic tanks, sewage treatment systems, erosion of natural deposits
Special Monitoring and Unregulated Contaminant ***			Your Water	Reporting limit	Sample Date	Typical Source of Contaminant	
Chloride (ppm)			18	4	03/10/09		
Sodium (ppm)			11	5	03/10/09	Erosion of natural deposits	
Sulfate			31	10	03/10/09		
Contaminant Subject to AL	MCL	MCLG	90% of Samples ≤ This Level	Number of Samples Above AL	Sample Date	Typical Source of Contaminant	
Lead (ppb)	AL=15 (TT)	0	0	0	2008	Corrosion of household plumbing systems; Erosion of natural deposits	

Copper (ppm)	AL=1.3 (TT)	1.3	0	0	2008	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Other sample results	Your water		RL (ppm)	Sample Date		Additional information
	ppm	gpg				
Hardness as CaCO3	173	10.11	20	03/10/09		Hardness is analyzed at least once a week by water department staff.
Iron (automated)	ND		0.1	03/10/09		Iron is analyzed daily by water department staff

Chlorine Residual Monitoring

Chlorine or Chloramines	Previous Year 2008											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average of all measurements taken in the month	N/A for RAA in year covered by CCR			0.4	0.52	0.68	0.54	0.54	0.38	0.46	0.6	0.52
Chlorine or Chloramines	Year covered by the CCR 2009											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average of all measurements taken in the month	0.58	0.56	0.6	0.44	0.52	0.45	0.45	0.54	0.38	0.49	0.32	0.42
RAA calculated quarterly of 12 monthly averages			0.53			0.52			0.51			0.48

*Unregulated contaminants are those for which EPA has not established drinking water standards. Monitoring helps EPA to determine where these contaminants occur and whether it needs to regulate those contaminants.

Lead in your drinking water 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 Chelsea 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 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>.

Copper in your drinking water comes from corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives. Some common health effects are Gastrointestinal distress and liver or kidney damage.

Monitoring and Reporting Requirements: The State and EPA require us to test our water on a regular basis to ensure its safety. Samples were collected and analyzed for fifty five (55) Pesticides, sixty four (64) Volatile Organic Compounds, ten (10) Carbamates and eleven (11) Chlorinated Acid Herbicides, all of which were **Non Detected**. The City of Chelsea Water Department met all the monitoring and reporting requirements for 2009.

We will update this report annually. Copies are available at the City of Chelsea Offices or by contacting the City of Chelsea Water Department at 734-475-8298.

We invite public participation in decisions that affect drinking water quality. The Chelsea City Council meetings are held the second and fourth Tuesday of each month at 7:00 pm. For more information about your water, or the contents of this report, contact City of Chelsea Water Department. For more information about safe drinking water, visit the U.S. Environmental Protection Agency at www.epa.gov/safewater/.