City of Owosso 2016 Annual Water Quality Report

Is my water safe?

We are pleased to present this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality. As in previous years **there were no violations of drinking water standards or monitoring requirements in 2015.** We are committed to providing you with information because informed customers are our best allies.

Where does my water come from?

Six groundwater wells serve as our water supply source. The wells are completed in coarse sands and gravel with well screens typically between 82 and 152 feet below ground surface. This water is pumped to the water treatment facility on Allendale Ave, here the groundwater is treated, and then pumped through water supply lines that connect to homes and businesses within the City, its surrounding townships and the City of Corunna. The State rates our wells as "susceptible" to potential sources of contamination. This is based on an assessment of the water supply aquifer geology, well construction, historical groundwater quality data, and presence of identified contaminant sources in the delineated "wellhead protection zone". Though our groundwater supply is rated as "susceptible" or vulnerable to contamination, extensive monitoring over decades of use indicates our combined well supply meets primary drinking water standards even before treatment. However, the rating indicates a need to maintain and increase our efforts to protect our groundwater supply from future sources of contamination.

2016 Wellhead Protection Plan

In 2004 Malcolm Pirnie, Inc. was contracted to prepare a Wellhead Protection Plan (WHPP) for the City of Owosso. This document was updated and prepared for submittal on June 2015. On July 1st, 2015 we received the Michigan Groundwater Management Tool (MGMT) map which verified our 2004 WHPP area and provides the updated Wellhead Protection Area (WHPA) for the City of Owosso now used by the Michigan Department of Environmental Quality (MDEQ). An updated City of Owosso Wellhead Protection Plan was approved by the MDEQ on 2/5/16. The City of Owosso's Wellhead Protection Program Plan (WHPP) is designed to (1) provide safe drinking water to the public, and (2) protect drinking water from potential sources of contamination by following the WHPP program guidelines set forth by the MDEQ. Once ground water becomes contaminated, it can be very difficult, costly, and in some cases impossible to clean up. Preventing ground-water contamination is the most effective way to protect your drinking water resources. The City realizes that it cannot control every land user in its Wellhead Protection Area, so here are some ways that you can help protect your drinking water and the drinking water that will be used by many generations to come.

How Can You Help Protect Your Drinking Water?

• Locate and properly plug unused and abandoned wells.
• Properly dispose of household hazardous waste.
• Properly maintain your septic system, if you have one.
• Consider alternatives to household products that contain hazardous materials.
• Follow instructions when using fertilizers and pesticides.
• Inspect aboveground and underground storage tanks for leaks.

Potential Sources of Contamination

• Leaking underground storage tanks.
• Hazardous materials spill.
• Transportation accidents.
• Improper waste disposal activities.
• Misuse of herbicides and pesticides.
• Failing septic systems and improper septic design.
• Byproducts from oil and gas well drilling activities.
• Road salt application.

How can I get involved?

The City of Owosso Water System is overseen by the Owosso City Council. Their meetings at 7:30 p.m. at City Hall, 301 W Main St. on the first and third Mondays of each month provide a forum for public input. We encourage public interest and participation whenever decisions are made that impact our community's water system and quality. Questions and comments can also be directed to the Water Filtration Plant Superintendent or Utilities Director.

Description of Water Treatment Process

Our groundwater supply, though safe to drink without treatment, is extremely hard with high levels of calcium, magnesium and iron. Water treatment consists of aeration, lime softening for hardness and iron reduction, pH adjustment using carbon dioxide, dual media filtration, and chlorination. Fluoride is added to replace naturally occurring fluoride removed during softening and to boost the concentration to a maximum of 0.7 ppm (parts per million) as recommended as a dental health measure. In 2015, a total of 613,472,000 gallons of water (an average of 1.681 million gallons of water per day) were treated and distributed to customers in the mid-County area. In December 2015, average water hardness was reduced from 500 ppm to 146 ppm. Residuals solids from the lime softening process, predominantly calcium carbonate and magnesium hydroxide, are temporarily stored in on-site lagoons for dewatering. In 2015, a total of 5,120 cubic yards of residual solids were removed to be applied to farm fields as an agricultural material for soil pH adjustment. The water treatment plant is staffed and operates around the clock. Four State Certified plant operators conduct routine daily tests on our drinking water quality at the water plant laboratory. Additional samples are sent to the state, or other certified laboratories for analyses, to assure that our well supplies are free from contamination and that our treated drinking water meets all applicable state and federal drinking water standards. The state establishes a minimum monitoring schedule for our public water supply. All required samples were collected on a timely basis in 2015. All sample results are reported to the MDEQ – Water Division, and are available to the public.

Water Conservation Tips

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference - try one today and soon it will become second nature.

- Take short showers - a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
- Visit www.epa.gov/watersense for more information.

Why are there contaminants in my drinking 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 Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791). 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 and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. In addition, traveling water can also pick up microbial contaminants, such as viruses and bacteria that 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 stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming. Pesticides and herbicides 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 can also come from gas stations, urban stormwater runoff, and septic systems. Finally, radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, USEPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Do I need to take special precautions?

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 about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

Other Information on Lead and Copper

Our water treatment process, lime softening definitely reduces the corrosiveness of our water supply. We maintain a positive stability index (average of positive 0.4) indicating our water has more of a tendency to coat piping and fixtures with mineral deposits or scale as opposed to a more aggressive water that would increase metal dissolving into the water from the piping or plumbing fixtures.

"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. City of Owosso Water System 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."

If you are concerned about Lead and Copper in your drinking water, you can have your water tested; see the City Website - Utilities Section for the latest information as to how to obtain a test sample bottle.

Water Quality Data Table

In order to ensure that tap water is safe to drink, USEPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The table below lists all of the drinking water contaminants that we detected from the calendar year 2015 unless noted otherwise. Although many more contaminants were tested for, only those substances listed below were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. The USEPA or the State requires The City of Owosso to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. In this table you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions below the table.

In addition we conducted some additional “unregulated contaminant” monitoring as part of EPA’s program to determine where certain contaminants might occur in drinking water and whether the agency should consider regulating those contaminants in the future. Certain substances, such as radium, are monitored less frequently than once a year because previous monitoring results have been consistently below levels of concern and the levels are not expected to vary significantly from year to year.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Range		Sample Date	Violation	Typical Source
				Low	High			
Disinfectants & Disinfection By-Products (There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)								
Chlorine (as Cl2) (ppm)	4	4	.7	0	.7	2015	No	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	NA	60	2	NA		2015	No	By-product of drinking water chlorination
TTHMs [Total Trihalomethanes] (ppb)	NA	80	38	NA		2015	No	By-product of drinking water disinfection
Inorganic Contaminants								
Barium (ppm)	2	2	.03	NA		2009	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Fluoride (ppm)	4	4	.21	.14	.76	2015	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Range		Sample Date	Violation	Typical Source
				Low	High			
Selenium (ppb)	50	50	2	NA		2009	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
Sodium (optional) (ppm)	NA		41	NA		2015	No	Erosion of natural deposits; Leaching
Chloride	NA	250	69	NA		2015	No	Naturally occurring or indicative of road salt contamination.
Sulfate	NA	250	114	NA		2015	No	Naturally occurring.
Microbiological Contaminants								
Fecal coliform/E. coli - in the distribution system (positive samples)	0	0	0	NA		2015	No	Human and animal fecal waste
A violation occurs when a routine sample and a repeat sample, in any given month, are total coliform positive, and one is also fecal coliform or E. coli positive.								
Total Coliform (positive samples/month)	0	1	0	NA		2015	No	Naturally present in the environment
Radioactive Contaminants								
Alpha emitters (pCi/L)	0	15	1.5	NA		2014	No	Erosion of natural deposits
Combined Radium (pCi/L)	0	5	1	NA		2014	No	Erosion of natural deposits (2003 data)

Contaminants	MCLG	AA	Your Water	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Inorganic Contaminants							
Copper - action level at consumer taps (ppm)	1.3	1.3	.05	2014	0	No	Corrosion of household plumbing systems; Erosion of natural deposits
Inorganic Contaminants							
Lead - action level at consumer taps (ppb)	0	15	11	2014	1	No	Corrosion of household plumbing systems; Erosion of natural deposits

Additional Monitoring

In 2014 as part of an on-going evaluation program the EPA has required us to monitor some additional contaminants/chemicals. Information collected through the monitoring of these contaminants/chemicals will help to ensure that future decisions on drinking water standards are based on sound science.

Name	Reported Level	Range		
		Low	High	
1,4-dioxane (ppb)	.079	.07	.088	This is used as a solvent and solvent stabilizer in various manufacturing processes.
chlorate (ppb)	158.5	93.6	196	This is present with sodium hypochlorite used for disinfection.
chromium (total chromium) (ppb)	.5475	.48	.62	Naturally occurring element, used in making steel and other alloys.
chromium-6 (hexavalent chromium) (ppb)	.4	.38	.42	Naturally occurring element, used in making steel and other alloys.
strontium (ppb)	236.75	217	263	Naturally occurring element.

Unit Descriptions	
Term	**Definition**
ppm	ppm: parts per million, or milligrams per liter (mg/L)
ppb	ppb: parts per billion, or micrograms per liter (µg/L)
pCi/L	pCi/L: picocuries per liter (a measure of radioactivity)
NTU	NTU: Nephelometric Turbidity Units. Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
positive samples/month	positive samples/month: Number of samples taken monthly that were found to be positive
NA	NA: not applicable
ND	ND: Not detected
NR	NR: Monitoring not required, but recommended.
positive samples	positive samples/yr: The number of positive samples taken that year

Important Drinking Water Definitions	
Term	**Definition**
MCLG	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.
MCL	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.
TT	TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
AL	AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
MRDLG	MRDLG: Maximum residual disinfection 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.
MRDL	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.
MNR	MNR: Monitored Not Regulated
MPL	MPL: State Assigned Maximum Permissible Level

Undetected Contaminants - The following are some contaminants that were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Violation	Typical Source
2,4,5-TP (Silvex) (ppb)	50	50	ND	No	Residue of banned herbicide
2,4-D (ppb)	70	70	ND	No	Runoff from herbicide used on row crops
Alachlor (ppb)	0	2	ND	No	Runoff from herbicide used on row crops
Atrazine (ppb)	3	3	ND	No	Runoff from herbicide used on row crops
Carbofuran (ppb)	40	40	ND	No	Leaching of soil fumigant used on rice and alfalfa
Cyanide (ppb)	200	200	ND	No	Discharge from plastic and fertilizer factories; Discharge from steel/metal factories
Dinoseb (ppb)	7	7	ND	No	Runoff from herbicide used on soybeans and vegetables
Endrin (ppb)	2	2	ND	No	Residue of banned insecticide
Heptachlor (ppt)	0	400	ND	No	Residue of banned pesticide
Heptachlor epoxide (ppt)	0	200	ND	No	Breakdown of heptachlor
Hexachlorobenzene (ppb)	0	1	ND	No	Discharge from metal refineries and agricultural chemical factories
Hexachlorocyclopentadiene (ppb)	50	50	ND	No	Discharge from chemical factories
Lindane (ppt)	200	200	ND	No	Runoff/leaching from insecticide used on cattle, lumber, gardens
Methoxychlor (ppb)	40	40	ND	No	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Nitrate [measured as Nitrogen] (ppm)	10	10	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite [measured as Nitrogen] (ppm)	1	1	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Oxamyl [Vydate] (ppb)	200	200	ND	No	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
PCBs [Polychlorinated biphenyls] (ppt)	0	500	ND	No	Runoff from landfills; Discharge of waste chemicals
Pentachlorophenol (ppb)	0	1	ND	No	Discharge from wood preserving factories
Picloram (ppb)	500	500	ND	No	Herbicide runoff
Simazine (ppb)	4	4	ND	No	Herbicide runoff
Toxaphene (ppb)	0	3	ND	No	Runoff/leaching from insecticide used on cotton and cattle

For more information please contact: David H. Haut - Water Plant Superintendent,

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