City of Orem

Annual Water Quality Report

Reporting Year 2015

This Water Quality Report provides information about the excellent water the City of Orem delivers to you every day. Our number one goal is to provide you and your family a safe and dependable supply of drinking water. Our employees strive to deliver a quality product and protect the city's precious water resources. To ensure the safety of your water, the Water Resources Division routinely monitors for contaminants in your drinking water according to federal and state laws, rules, and regulations. This water report is based on the results from the most recent testing done in accordance with these laws and regulations.

Where Does My Water Come From?

Orem uses a variety of sources to provide water to its residents and customers. Approximately 60% of Orem's water comes from surface water sources, whereas 40% comes from ground water sources. Surface water sources include the Provo River, Deer Creek Reservoir, and Jordanelle Reservoir. All of Orem's surface water is treated (filtered and disinfected) at the Don A. Christiansen Regional Water Treatment Plant (DACRWTP), which is operated by the Central Utah Water Conservancy District (CUWCD). Orem's ground water sources consist of nine deep wells located throughout the city. Wells pump from subterranean aquifers and provide 25% of Orem's water. Two mountain spring sources located in Provo Canyon contribute 15% of Orem's water. Ground water (wells and springs) is pure enough to not require treatment. All of Orem's water, whether from surface or ground water, is blended together within the distribution system. In 2015, Orem produced over 8.6 billion gallons of clean, safe drinking water to its customers.

Safe Drinking Water

In 1974, the Federal Safe Drinking Water Act (SDWA) was passed to establish standards for public drinking water. The law was amended in 1986 and again in 1996 and requires many actions to protect drinking water. The United States Environmental Protection Agency (USEPA) and the Utah State Department of Health set water quality standards that require water suppliers to monitor and treat potentially harmful contaminants. Drinking water standards specifically relate to your health and are generally based on health affects which may occur if a person were to drink two liters (about two quarts) of water each day for seventy years.

Bacteriological And Chemical Testing

More than 1,420 drinking water samples were analyzed for bacteriological contamination in 2015, and no contamination was confirmed in these samples. Only trace amounts of chemicals identified in this document were detected in Orem source water. Orem drinking water meets or exceeds all quality standards set by the (USEPA) and State of Utah(USEPA) and the State of Utah.

Ensuring Safe Tap Water

National Primary Drinking Water Regulations (NPDWRs or primary standards) are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water. Orem treats its water according to these regulations.

Citizen Participation

If you would like to participate in decisions that affect drinking water quality in the City of Orem, you are invited to attend an Orem City Council meeting. These public meetings are typically held on the 2nd and 4th Tuesday of each month at 6:00 p.m. in the City Council Chambers at the Orem City Center located at 56 North State Street in Orem, Utah. More information about contaminants and potential health affects can be obtained by visiting www.epa.gov/safewater/ or calling the USEPA Safe Drinking Water Hotline at (800) 426-4791.

Water Quality

Water Quality Data

The following table lists all detected contaminants in Orem's drinking water system during the 2015 calendar year. The presence of these contaminants does not necessarily indicate the water poses a health risk. A list of definitions and abbreviations is found above the table for reference. Monitoring is required at least every 9 years for surface water and every 3 years for groundwater.

Variances and Exemptions

Due to the high quality of Orem's water, the State of Utah and USEPA have granted the City of Orem and the DACRWTP exemptions that allow for conducting some chemical testing less frequent than annually.

Definitions and Abbreviations

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.	**mg/L**	Milligrams per liter (mg/L) or parts per million (ppm).
MCLG	Maximum Contaminant Level Goal: The level of contaminant in drinking water below which there is no	**µg/L**	Micrograms per liter (µg/L) or parts per billion (ppb).
AL	Action Level: The concentration of a contaminant which, when exceeded triggers treatment or other requirements	**MNR**	Monitoring Not Required.
Range	The range of detection of multiple samples for a	**ND**	Non Detectable.
pCi/L	Picocuries per liter: A measurement of radioactivity.	**TT**	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
NTU	Nephelometric Turbidity Units: A measurement of water clarity.	**UV-254**	A measurement of ultraviolet light absorption by organic carbon, measured at a wavelength of 254 nanometers per 1/cm (reciprocal centimeters).
UR	Unregulated.	**NE**	None Established.
µmhos/cm	Micromhos per centimeter: A measurement of conductivity.	**grains/gallon**	A unit of water hardness defined as 1 grain of calcium carbonate dissolved in 1 gallon of water.

					City of Orem			DACR Water Treatment Plant			
Microbiological	Test Date	Units	MCL	MCLG	Highest No. of Positive	2015 Range	Violation	2015 Average	2015 Range	Violation	Typical Source of Contaminant or Other Comments
Total Coliform	2015	% positive per month	5%	0	0	ND -1	No	0	0	No	Coliforms are naturally present in the environment; as well as feces; fecal coliforms and E. coli only come from human and animal fecal waste.
Escherichia coli (E. coli)	2015	% positive per month	TT	TT	0	0	No	0	0	No	Fecal coliforms and E. coli only come from human and animal fecal waste.
	Test Date	Units	MCL	MCLG	Lowest Level Detected	Highest Level Detected	Violation	2015 Average	2015 Range	Violation	Typical Source of Contaminant or Other Comments
Turbidity	2014	NTU	95% <0.3	NE	0	15	No	0.026	0.021—0.042	No	Erosion of natural deposits; naturally occurring and soil runoff.

					City of Orem			DACR Water Treatment Plant			
Inorganic Contaminants	Last Date Tested	Units	MCL	MCLG	Lowest Level Detected	Highest Level Detected	Violation	2015 Average	2015 Range	Violation	Typical Source of Contaminant
Arsenic	2014, 2015	µg/L	10	0	0	1.5	No	2.3	ND—3.34	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes.
Barium	2014	mg/L	2	2	0.057	0.106	No	0.07	ND—0.07	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Chromium (total)	2014	µg/L	100	100	ND	ND	No	ND	ND—7.9	No	Discharge from steel and pulp mills; erosion of natural deposits.
Fluoride	2014	mg/L	4	4	0.201	0.5	No	0.25	ND—0.25	No	Erosion of natural deposits; discharge from fertilizer and aluminum factories.
Nickel	2014	µg/L	100	100	0	3.9	No	ND	ND	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
Nitrate	2015	mg/L	10	10	0.392	1.87	No	0.2	ND—0.3	No	Runoff from fertilizer use; leaking from septic tanks; sewage; erosion of natural deposits.
Selenium	2014	µg/L	50	50	0	3.5	No	ND	ND	No	Erosion of natural deposits; mining or metal refinery discharge.
Thallium	2014	µg/L	2	0.5	0.3	0.5	No	0	0	No	Discharge from electronics, glass, and leaching from ore-processing sites; drug factories.
Radioactive Contaminants	Test Date	Units	MCL	MCLG	Lowest Level Detected	Highest Level Detected	Violation	2015 Average	2015 Range	Violation	Typical Source of Contaminant
Alpha Emitters	2011, 2014	pCi/L	15	0	0.87	4.1	No	3.8	ND—3.8	No	Erosion of natural deposits.
Combined Radium 226/ 228	2011, 2014	pCi/L	5	0	0.86	3.1	No	0	0	No	Erosion of natural deposits.
Gross Alpha (including radon and uranium)	2014	pCi/L	0	0	1.6	1.6	No	3.8	ND—3.8	No	Erosion of natural deposits.
Radium 226	2011, 2014	pCi/L	5	0	0.44	0.97	No	0	0	No	Erosion of natural deposits.
Radium 228	2011, 2014	pCi/L	5	0	-0.11	2.3	No	0.34	ND—2.79	No	Erosion of natural deposits.
Disinfectants And Disinfection By-products	Test Date	Units	MCL	MCLG	2015 Average	2015 Range	Violation	2015 Average	2015 Range	Violation	Typical Source of Contaminant or Other Comments
Chlorine	2015	mg/L	4	4	0.32	0.05-1.51	No	0.96	0.43 - 1.90	No	Drinking water disinfectant.
Total Trihalomethanes (TTHMs)	2015	mg/L	80	0	0	48.2	No	30.7	ND—70.5	No	By-product of drinking water chlorination.
Haloacetic Acids (HAA5s)	2015	mg/L	60	0	0	30.1	No	16.9	ND—34.4	No	By-product of drinking water chlorination.
Pesticides/PCB's/ SOC's	Test Date	Units	MCL	MCLG	Highest Level Detected	2015 Range	Violation	2015 Average	2015 Range	Violation	Typical Source of Contaminant or Other Comments
Bis (2-ethlyhexyl) adiptate	2014	µg/L	6	0	ND	0	No	ND	ND—0.67	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
All other Parameters	2014	µg/L	Varies	Varies	ND	0	No	ND	ND	No	Various sources.

					City of Orem			DACR Water			
VOC's	Test Date	Units	MCL	MCLG	Highest Level Detected	2015 Range	Violation	2015 Average	2015 Range	Violation	Typical Source of Contaminant or Other Comments
Chloroform	2014	µg/L	NE	70	ND	0	No	18.9	ND—49.2	No	By-product of drinking water disinfection; erosion of natural deposits.
Bromodichloro-methane	2014	µg/L	NE	0	ND	0	No	8.8	ND—16.1	No	By-product of drinking water disinfection.
All other Parameters	2014	µg/L	Varies	Varies	ND	0	No	ND	ND	No	Various sources.
Organic Material	Test Date	Units	MCL	MCLG	Highest Level Detected	2015 Range	Violation	2015 Average	2015 Range	Violation	Typical Source of Contaminant or Other Comments
Total Organic Carbon	2014	mg/L	TT	NE	MNR	0	No	1.6	1.3— 2.2	No	Naturally occurring.
UV-254	2014	1/cm	UR	NE	MNR	0	No	0.021	0.016—0.025	No	Naturally occurring. This is a measure of UV-absorbing organic compounds.

Health Care Alert

The Central Utah Water Conservancy District's Don A. Christiansen Regional Water Treatment Plant has found evidence that cryptosporidium may at times be present in its untreated source water. However, cryptosporidium has never been found in its finished (treated) water. Cryptosporidium must be ingested to cause disease and it may be spread through means other than drinking water. Ingestion of this parasite may cause abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Based on current knowledge, cryptosporidium does not present a health risk for the general public. However, immune-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/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the USEPA Safe Drinking Water Hotline at (800)426-4791.

What Is Lead And How Does Lead Get Into Water?

Lead is a toxic metal that was used for many years in products found in and around homes. Lead was sometimes used in household plumbing materials or in water service lines used to bring water from the main to the home. Lead leaches into water through corrosion – a dissolving or wearing away of metal caused by a chemical reaction between water and plumbing. Lead can leach into water from pipes, solder, fixtures and faucets (brass), and fittings. The amount of lead in water also depends on the types and amounts of minerals in the water, how long the water stays in the pipes, the amount of wear in the pipes, the water's acidity, and its temperature. A prohibition on lead in plumbing materials has been in effect since 1986. Effective January 4, 2014, the federal Lead Contamination Control Act requires that only "lead-free" products can be installed drinking water systems. The new definition of "lead-free" states the amount of lead that can be in material in contact with drinking water to a weighted average of the wetted surface not to exceed 0.25%. The main sources of exposure to lead are ingesting paint chips and inhaling dust. The EPA estimates that 20 percent or more of human exposure to lead may come from lead in drinking water.

What Are EPA's Drinking Water Regulations For lead?

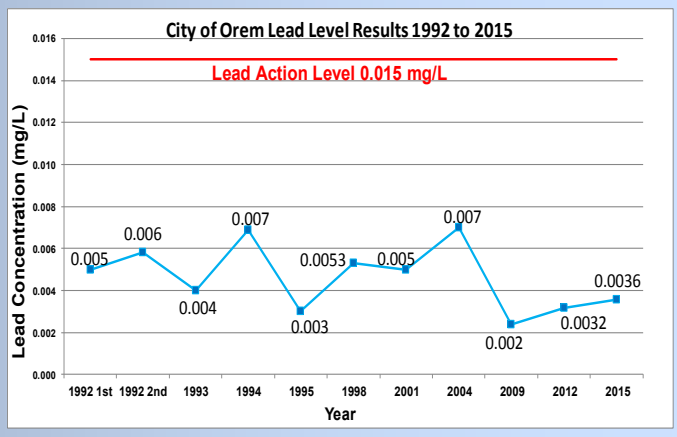
In 1974, Congress passed the Safe Drinking Water Act. This law requires the EPA to determine the level of contaminants in drinking water at which no adverse health affects are likely to occur with an adequate margin of safety. These non-enforceable health goals, based solely on possible health risks are called maximum contaminant level goals (MCLGs). The MCLG for lead is zero. The EPA has set this level based on the best available science which shows there is no safe level of exposure to lead. For most contaminants, the EPA sets an enforceable regulation called a maximum contaminant level (MCL) based on the MCLG. However, because lead contamination of drinking water often results from corrosion of the plumbing materials belonging to the water system's customers, the EPA established a treatment technique based on an action level of 0.015 mg/L rather than an MCL for lead. A treatment technique is an enforceable procedure or level of technological performance which water systems must follow to ensure control of a contaminant. The treatment technique regulation for lead (referred to as the Lead and Copper rule) requires water systems to control the corrosivity of the water. The regulation also requires the City of Orem to collect 30 tap samples from homes preferably built between 1982 and 1986 every three years.

What Are Lead's Health Affects?

The primary source of lead exposure for most children is lead-based paint in older homes, though lead in drinking water can add to that exposure. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development, including behavioral problems and learning disabilities. Children six years old and under are most at risk because this is when the brain is developing. Children could show slight deficits in attention span and develop learning disabilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

City of Orem Lead And Copper Results

The City of Orem collects 30 tap samples from homes every three years as required by the EPA. The City of Orem has never had a violation of the lead and copper standards since the EPA required sampling in 1992 and is not required to treat the water it provides for corrosivity. The city completed the last required sampling in July and August of 2015. Of the 35 homes sampled, 29 had no detectable levels. Orem's water has calcium and manganese in the water, that create a protective lining or "scale" on the inside of the plumbing protecting the materials from most corrosion. In addition to these samples, pH and conductivity samples are taken routinely in the distribution system and at the source water sites to monitor chemical changes and the corrosiveness of the water.



					City of Orem					
Lead and Copper	Test Date	Units	AL	MCLG	Lowest Level Detected	Highest Level Detected	90th Percentile	# of sites over AL	Violation	Typical Source of Contaminant
Copper	2015	mg/L	1.3	1.3	0.004	0.717	0.229	0	No	Erosion of natural deposits; corrosion of household
Lead	2015	mg/L	0.015	0	0	0.013	0.00327	0	No	Erosion of natural deposits; corrosion of household

How Will I know If Lead Is In My Drinking Water?

Since you cannot see, taste, or smell lead dissolved in water, testing is the only sure way of telling whether there are harmful quantities of lead in your drinking water. Testing costs for lead vary from $20 to $100. For a list of certified labs please visit www.drinkingwater.utah.gov. Indicators that your home may have lead in the water are if your home has lead pipes (lead is a dull gray metal that is soft enough to be easily scratched with a key) or if you see signs of corrosion (e.g., frequent leaks, rust-colored water). Homes built between 1982 and 1986 are especially susceptible to lead exposure due to the lead contained in the soldered joints. If your home was built between 1982 and 1986 and has not had the plumbing replaced and you would like to participate in the next lead and copper sampling in 2018, please contact Orem Public Works Department at (801) 229-7500 or email us at oremcitywater@orem.org. Because of the limited numbers of samples collected, replacement of original plumbing or point-of-use treatment (e.g. water softener, carbon filter system, etc.), your home may or may not be selected for testing. Additional information may be obtained by visiting *www.epa.gov/safewater/lead/* or calling the USEPA Safe Drinking Water Hotline at (800) 426-4791.

How Can I Reduce My Family's Exposure To Lead In Tap Water?

The most important time to flush your internal plumbing is after long periods of no use, such as first thing in the morning, after work, or upon returning from vacation. Running cold water from the faucets for drinking can improve water quality by drawing fresh water into the home, particularly after long periods of time when water has not been used. The amount of time you should run cold water to flush your internal plumbing depends on whether you have a lead service line, the length of the lead service line, and the amount of plumbing in your home. Typically, 30 seconds to 2 minutes (or until you feel the temperature of the water change) is sufficient. To conserve water, other household water usage activities such as showering, washing clothes, flushing the toilet, and running the dishwasher are effective methods for flushing pipes and allowing water from the distribution system to enter household pipes. Use cold water for cooking, But do not cook with or drink water from the hot water tap! Since it is important to note that lead dissolves more easily into hot water. Boiling water will not reduce lead. When purchasing replacement plumbing products, make sure the products have been tested and certified to "lead-free" standards.

Unregulated Parameters (Monitoring Not Required)

For your information, the following conditions are secondary standards and only affect the water aesthetically rather than an actual health risk.

				City of Orem				DACR Water Treatment Plant			
	Test Date	Units	MCL	Lowest Level Detected	Highest Level Detected	Average	Violation	2015 Average	2015 Range	Violation	Typical Source of Contaminant
pH	2015		6.5—8.5	7.48	8.06	7.81	No	7.68	7.06—8.09	No	Naturally occurring.
Sulfate	2014	mg/L	250	33.2	67	50.1	No	40	40—49.3	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills, runoff from cropland.
Total Dissolved Solids	2014	mg/L	500	236	468	252	No	285	169—395	No	Erosion of natural deposits.
Sodium	2014	mg/L	500	17	29.2	23.1	No	298	253—347	No	Erosion of natural deposits.
Calcium Hardness	2015	mg/L	NE	171	377	252	No	141	110—180	No	Naturally occurring.
	2015	grain/gallon	NE	10	22	15	No	8.2	6.4—10.5	No	
Conductance	2015	µmhos/cm	NE	230	648	473	No	429	289—471	No	Naturally occurring.

Cross Connection Control

To protect Orem's water supply, the Water Resources Division has adopted a cross connection control program. This program is required by federal and state agencies and is designed to preserve safe drinking water once the supply has entered the system. A cross connection is any connection that provides a path for contamination to occur and is not protected by a backflow prevention device or assembly. A cross connection may be as simple as a hose-end sprayer for fertilizers or pesticides that you use in your yard or a hose forced into a drain pipe to free a plug. When this happens, it may be possible for contaminated water to be introduced into the drinking water system. Backflow prevention devices and assemblies provide protection from pollution or contamination of the drinking water system. The proper installation, use, and maintenance of this protection is required for backflow devices or assemblies to function properly. This is outlined in Section 21-1-14 of the City Municipal Code, which can be accessed through the Government Menu at www.orem.org. All lawn sprinkler systems are required to have an approved backflow assembly installed on the system all backflow assemblies are to be tested within 10 days of installation and annually there after by a state certified backflow technician. A link to certified testers can be found at https://waterlink.utah.gov/deqWater/public/publicBackflowComm.html. Backflow reports are to be mailed to the City of Orem Public Works at 1450 West 550 North Orem, Utah, 84057 or emailed to orembackflowreports@orem.org. The city is available to meet with private or commercial property owners to consult on possible hazards that may contaminate their drinking water. Please contact the Orem Public Works Department at (801) 229-7500 with any questions regarding cross connection control or backflow.

Source Water Contaminants

- The following contaminants may be present in source water before it is treated:
- Microbial contaminants, such as viruses and bacteria, which come from sewage treatment facilities, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, are naturally occurring or can result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, and farming.
- Pesticides and herbicides come from a variety of sources such as agriculture and residential uses.
- Radioactive contaminants are naturally occurring in water and soil.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, are by-products of industrial processes and petroleum production. These contaminants can also come from gas stations, urban storm water runoff, and septic systems.

If you have questions regarding any of the information contained in this document, please contact the Orem Public Works Department at (801) 229-7500 or visit us on the web at www.orem.org.