Water...

"If there is magic on this planet, it is contained in water."
Loren Eisley, The Immense Journey, 1957

City of Redding

2005 Water Quality Report

REDDING MUNICIPAL UTILITIES

What do you know about...

Global Water Distribution?

The oceans cover about **71%** of our home – planet Earth. That translates into about **97%** of Earth's water. Almost **2%** of water is trapped in glaciers and polar ice-caps. That leaves just about **1%** of Earth's water for **6.5 billion** people to share.

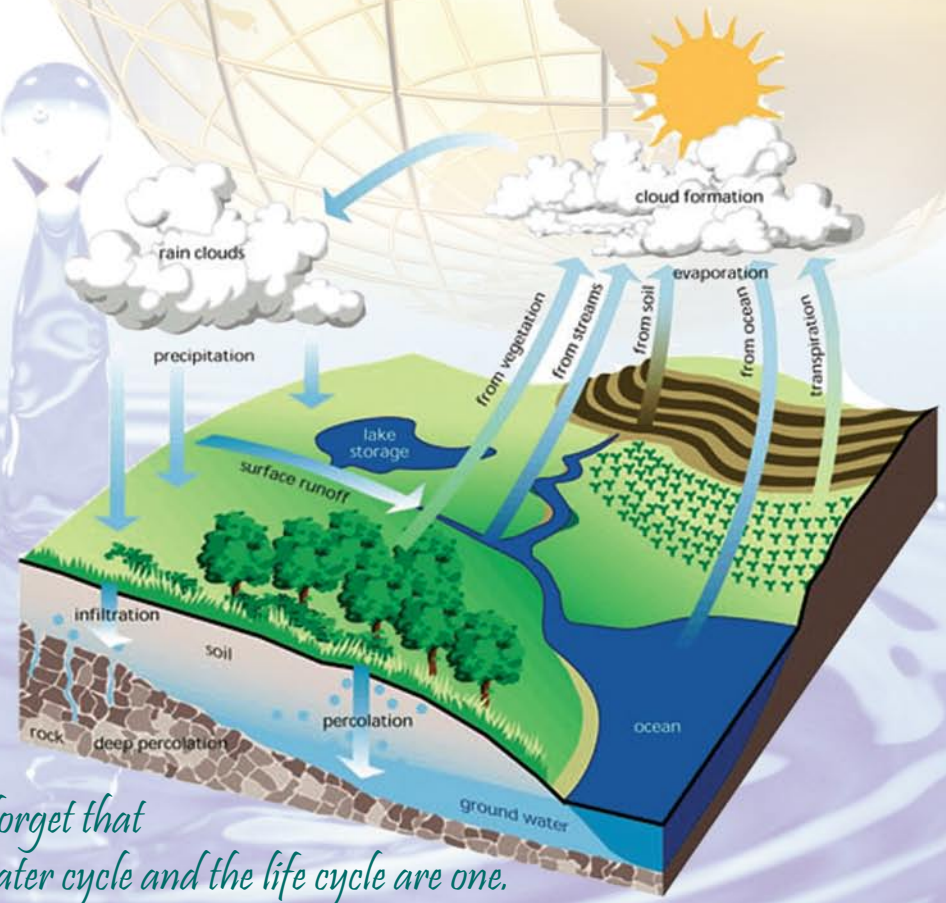
Of that 1%, **70%** is found as groundwater and just **30%** is available in surface water sources such as lakes and rivers.

Your Water Supply?

The City of Redding has **2** major sources of drinking water: surface water and groundwater. The Sacramento River and Whiskeytown Lake are surface water sources and supply the City with **6.4 billion gallons** of water per year. The Redding Groundwater Basin, through **14** wells, supplies **2.8 billion gallons** of water to the City each year.

The Hydrologic Cycle?

Surface water evaporates from the Earth's surface and then condenses to form clouds which release water, in the form of snow, sleet, hail, or rain, back to the Earth. Some water percolates into the ground and is stored as groundwater for future use. Some water is collected in lakes and rivers or falls into the ocean. This process of Evaporation, Condensation, and Precipitation is known as the Hydrologic Cycle. Water is constantly being renewed and reused through this natural process.



We forget that the water cycle and the life cycle are one.
~Jacques Cousteau

Source Water Assessment & Protection

The City of Redding conducted source assessments for its surface water sources in July 2001 and groundwater sources in May 2002. Surface waters, in general, are unprotected sources of drinking water and thus highly susceptible to contamination. The groundwater drawn from the Redding Groundwater Basin is located in an **unconfined aquifer** and somewhat susceptible to contamination. Well monitoring, monitoring the waters of the Sacramento River and Whiskeytown Lake in addition to employing effective **treatment techniques** helps the Water Utility ensure that the drinking water delivered to our customers is of very high quality.

Unconfined aquifer:
A layer of water below the surface of the earth and found below porous layers. Rainwater seeps into the ground, recharging the aquifer. Groundwater can be extracted from the aquifer through wells.

Although our water sources are of high quality, there are some activities that have the potential to contaminate the water supply. The City's sources are considered most vulnerable to recreational use, agricultural drainage and grazing. These activities are not associated with contaminants detected in the water supply. The City's sources are considered most vulnerable to the following activities associated with some contaminants detected in the water supply: fueling areas, septic systems, biosolids application and chemical/ petroleum distribution pipelines. The City's source water assessments are available for review by calling 530-224-6068; more information may be obtained by calling 530-225-4475.

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 **USEPA** Safe Drinking Water Hotline at (800) 426-4991.

USEPA:
United States Environmental Protection Agency

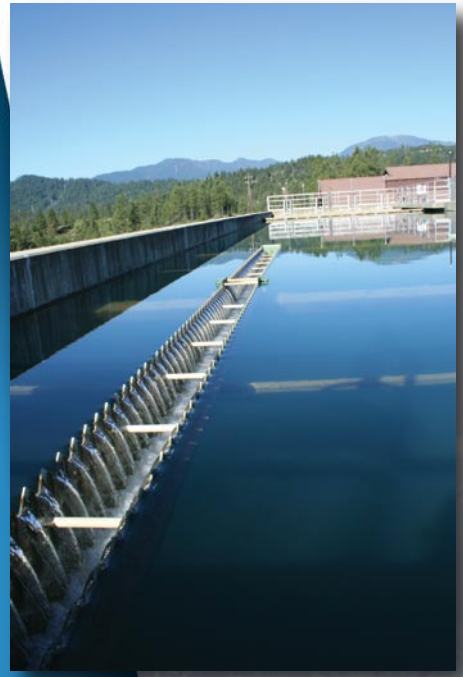
Treatment techniques:
TT – a required process intended to reduce the level of a contaminant in drinking water.

Pure water, when and where you need it is worth whatever it costs to get it there.
~Jim Wright, the coming water famine, 1966

Vulnerability:

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. USEPA and Centers for Disease Control (CDC) guidelines on appropriate means to decrease the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

Safe Drinking Water Act ~ Water Standards



For over 30 years, public water systems have been regulated by the Environmental Protection Agency (EPA) through the Safe Drinking Water Act (SDWA), passed by Congress in 1974. The EPA was authorized to set national drinking water standards as a way to protect the health of citizens. In California, drinking water standards (also called **Maximum Contaminant Levels**, or MCLs) are set in two categories: **Primary Standards** which limit the level of contaminants in the water supply, and **Secondary Standards,** which relate to aesthetic qualities such as taste, odor and color.

Maximum Contaminant Level (MCL):
The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs as is economically and technologically feasible. Secondary MCLs are set to protect against odor, taste and appearance of drinking water.

Primary Drinking Water Standards (PDWS):
MCLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Initially, the SDWA focused on water treatment as a way to provide safe drinking water to the public. But treatment alone is not enough. There are many threats to drinking water: chemicals disposed of improperly, animal waste, human waste, and naturally occurring contaminants to name a few. In 1986 and 1996, amendments to the SDWA strengthened the regulatory power of the EPA and required, among other things, source water protection, water operator certification and the creation of an annual report to educate consumers about their drinking water.

ND: Not detected in the analysis of the sample.

Distribution Monitoring						
Contaminant	MCL	PHG MCLG	Sample Date	Highest Detected	Range Detected	Possible Sources of Detected Contaminants in Drinking Water
Primary Standards:						
Microbiological						
Total Coliform Bacteria	> 5% of Samples	0	Monthly	0%	0.0% - 0.0%	Naturally present in the environment
Lead and Copper						
Copper (ppm) 0 Sites > AL out of 32 sampled	AL = 1.3	0.17	2004	0.351 = 90th percentile	ND - 0.745	Erosion of natural deposits; corrosion of household plumbing systems; leaching from wood preservatives
Lead (ppb) 0 Sites > AL out of 32 sampled	AL = 15	2	2004	5 = 90th percentile	ND - 12.3	Erosion of natural deposits; corrosion of household plumbing systems
Disinfectants & Disinfection By-Products						
Chlorine (ppm)	5		every 4 hours 2005	1.11	0.01 - 1.11	Drinking water disinfectant added for treatment
Haloacetic Acid (HAA5) (ppb)	60	N/A	Quarterly 2005	67	8 - 67	By-product of drinking water chlorination
Total Trihalomethanes (TTHMs) (ppb)	80	N/A	Quarterly 2005	44	13 - 44	By-product of drinking water chlorination

PHG: Public Health Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

The City's water supplies must meet stringent water quality standards that are set by the EPA and the California Department of Health Services - Division of Drinking water (CDHS-DDW). The tables you find in this report list only the contaminants found in our drinking water supply.

Did you know there are over 100 contaminants currently regulated by the EPA?

We have been quick to assume rights to use water but slow to recognize obligations to preserve and protect it...
~Sandra Postel, Last Oasis: Facing Water Scarcity, 1993

Source Water Monitoring: Surface Water							
Contaminant	MCL	PHG MCLG	Sacramento River		Whiskeytown Lake		Possible Sources of Detected Contaminants in Drinking Water
Primary Standards:							
Microbiological			**Highest Detected**	**Range Detected**	**Highest Detected**	**Range Detected**	
Turbidity (NTU)	TT = 1 NTU	N/A	0.41	0.02 - 0.41	0.51	0.03 - 0.51	Soil Runoff
Sampled daily	TT percentage of samples<0.3 NTU		98.3%	N/A	94.6%	N/A	
Inorganic			**Sample Date**	**Detected**	**Sample Date**	**Detected**	
Aluminum (ppb)	1000	600	2003	ND	2004	70	Erosion of natural deposits; residue from some surface water treatment processes
Nickel (ppb)	100	12	2003	2	2004	ND	Erosion of natural deposits; discharge from metal factories
Secondary Standards:							
Chloride (ppm)	500	N/A	2003	1.75	2004	1.35	Runoff/leaching from natural deposits
Hardness (ppm)	N/A	N/A	2003	41	2004	29	Found in ground and surface water
MBAS (ppb)	0.5	N/A	2003	0.05	2004	ND	Municipal and industrial waste discharges
Sodium (ppm)	N/A	N/A	2003	5	2004	2.5	Found in ground and surface water
Sulfate (ppm)	500	N/A	2003	3.4	2004	3	Runoff/leaching from natural deposits
Total Dissolved Solids (ppm)	1000	N/A	2003	69	2004	42	Runoff/leaching from natural deposits

NTU: Nephelometric Turbidity Unit - measurement of the cloudiness of the water.

How Much is Parts Per Million?

Any chemical in the environment can have health effects depending on the exposure. Some exposure to chemicals may in fact be beneficial at lower levels and toxic at higher levels. Other chemicals can cause ill effects at very low doses. And what may be acceptable for humans is unacceptable for other living creatures in our ecosystem.

Parts per million (ppm), parts per billion (ppb), and parts per trillion (ppt), are the most commonly used terms to describe very small amounts of chemicals or contaminants in our environment. But how do you put it all in perspective? To understand the level of contamination expressed in MCLs (Maximum Contaminant Levels) and PHGs (Public Health Goals) use the following guide:

Source Water Monitoring: Groundwater						
Contaminant	MCL	PHG (MCLG)	Sample Date	Highest Detected	Range Detected	Possible Sources of Detected Contaminants in Drinking Water
Primary Standards:						
Inorganic						
Arsenic (ppb)	50	N/A	2004	9	ND - 9	Erosion of natural deposits; residue from glass and electronics production waste
Barium (ppm)	1	(2)	2002, 2005	153	ND - 0.153	Erosion of natural deposits; discharges of oil drilling wastes and from metal refineries
Fluoride (ppm)	2	1	2005	0.2	ND - 0.2	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate (NO3) (ppm)	45	45	2005	20.6	ND - 21.5	Erosion of natural deposits; runoff from fertilizer use; leaching from septic tanks, sewage
Nickel (ppb)	100	12	2003, 2005	5	ND - 5	Erosion of natural deposits; discharge from metal
Secondary Standards:						
Inorganic						
Chloride (ppm)	500	N/A	2005	32.6	4.36 - 32.6	Runoff/leaching from natural deposits
Hardness (ppm)	N/A	N/A	2003, 2004	152	39 - 152	Found in ground and surface water
Manganese (ppb)	50	N/A	2004, 2005	104	ND - 104	Erosion of natural deposits
Foaming Agents (MBAS) (ppb)	0.5	N/A	2003, 2005	0.18	ND - 0.18	Municipal and industrial waste discharges
Sodium (ppm)	N/A	N/A	2002, 2004	29	6 - 29	Found in ground and surface water
Sulfate (ppm)	500	N/A	2005	9.9	2.6 - 9.9	Runoff/leaching from natural deposits
Total Dissolved Solids (ppm)	1000	N/A	2003, 2005	233	116 - 233	Runoff/leaching from natural deposits

1 ppm =
1 inch in 16 miles
1 second in 11 days
1 pancake in a stack 4 miles high

1 ppb =
1 inch in 16,000 miles
1 second in 32 years
1 pinch of salt in 10 tons of potato chips

1 ppt =
1 inch in 16 million miles
1 second in 32,000 years
1 drop of impurity in 500,000 barrels of water

Water Quality

Contaminants that may be present in source waters 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, urban storm water 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 storm water runoff, agricultural application, and septic systems.

Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

Sampling ~

Before the water reaches your tap, samples from the water distribution system, groundwater wells and the water treatment plants are collected and tested in State-certified laboratories. The City of Redding Water Utility has a regular program of water analysis and system inspection that assures safe water for you and your family. There are eight State-certified water plant operators who assure that water treatment operations provide excellent water quality three hundred sixty-five days a year.

The State allows monitoring for some contaminants less than once per year since the concentration of these contaminants does not change frequently. Some of the tests, though representative, are more than one year old.

And let this be the law: If anyone intentionally pollutes the water of another, whether the water of a spring, or collected in reservoirs, either by poisonous substances, or by digging, or by theft, let the injured party bring the cause before the warden of the city.

Plato, Laws, c. 400 B.C

Action Level (AL): The concentration of a contaminant which, when exceeded, triggers a treatment technique or other requirement which a water system must follow.

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 are set by the U.S. Environmental Protection Agency.

Your Opinion Matters

We welcome public participation in water quality issues. Information that deals with decisions about our water system is addressed during Redding City Council Meetings. These meetings are held the first and third Tuesday each month at 7:00 pm in the City Council Chambers at the Civic Center, 777 Cypress Avenue, Redding

How to contact us:

Water Quality Information	(530) 225-4475
Utility Customer Service & Billing	(530) 339-7200
Water Conservation Materials	(530) 224-6032
Cross-Connection Control/Backflow	(530) 224-6031
General Information	(530) 224-6068

Website: www.ci.redding.ca.us/water/index.html

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Este Informe contiene informacion muy importante sobe su agua beber. Traduzcalo o hable con alguien que lo entienda bien

To Our Customers:

The City of Redding Water Utility is proud to bring you our 2005 Water Quality Report. We are committed to delivering water of the highest quality to all our customers - water that meets both Federal and State Water Quality Standards each and every day of the year. Because we care about our customers, we want you to have factual and current information about our water supply. The monitoring data contained in this report was taken from water analysis performed through December 2005.

Water customers who receive this report are asked to share this information with any tenant or water user on the premise. We welcome your comments and are available to answer questions and provide more information if needed. Please call 530-225-4475 or 530-224-6040.

When the well's dry, we know the worth of water.

Benjamin Franklin, Poor Richard's Almanac, 1746

REDDING MUNICIPAL UTILITIES

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