2004

City of Redding

Water Quality Report

REDDING MUNICIPAL UTILITIES

From Source ...to Tap

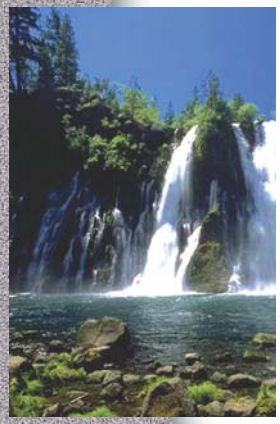
The City of Redding Water Utility is proud to bring this Water Quality Report to you. The information contained in this report was taken from water analyses performed through December 2004.

The summarized statements on water quality are required by the United States Environmental Protection Agency even though the water is of high quality.

Water customers who receive this report are asked to share this information with any tenant or water user on the premise.

We would like all our customers to have current and factual information about our water supply. We are available to answer your questions and provide more information if needed. Please call 530-225-4475, 530-225-4192, or 530-224-6040.

Wherever you live ~ You live in a Watershed



What is a Watershed?

A watershed is the area of land that catches rain and snow and drains or seeps into a marsh, stream, river, lake, or into the ground. As rain or snowmelt moves across the land, it picks up soil, fertilizers, pesticides, and other contaminants. As more of these contaminants find their way into our water supply, the quality of that water supply is degraded.

Watersheds can range in size from a few acres to thousands of square miles. Watersheds cross county, state, and even national boundaries. All of our drinking water originates in a watershed. The source may be a river, a lake, or a groundwater well.

Water Sources

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 sources of drinking water, both tap and bottled water, include surface water such as rivers and lakes, and groundwater 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 human activity.

What's in my water before treatment?

All drinking water, including tap water and bottled water, originates in rivers, lakes, streams, ponds, reservoirs, springs, and wells. Drinking water may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the drinking water poses a health risk.

Contaminants that may be present in source waters before they are treated 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, and septic systems.

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

Water Quality

Standards

As required by the Federal Safe Drinking Water Act, the City's water supplies must meet stringent water quality standards set by the State Department of Health Services - Division of Drinking Water (CDHS-DDW), the United States Environmental Protection Agency (USEPA), and the Food and Drug Administration (FDA). These three organizations set standards that are very protective of public health.

In California, drinking water standards (also called Maximum Contaminant Levels, or MCLs) are set in two categories: Primary Standards relative to public health and Secondary Standards relating to aesthetic qualities such as taste, odor, and color. You will find a complete listing of both types of standards along with the analysis results of your water supply in this report.

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. We employ eight State-certified water treatment operators who assure that 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.

Distribution Monitoring						
Contaminant	**MCL**	**PHG MCLG**	**Sample Date**	**Highest Detected**	**Range Detected**	**Possible Sources of Detected Contaminants in Drinking Water**
Primary Standards:	**Mandatory health-related standards established by the California Department of Health Services Division of Drinking Water and the United States Environmental Protection Agency**					
Microbiological						
Total Coliform Bacteria	> 5% of Samples	0	Monthly	1.1%	0 - 1.1%	Naturally present in the environment
Inorganic						
Copper (ppm) 0 Sites above AL out of 32 sampled	AL = 1.3	0.17	Jul-04	0.351 = 90th percentile	ND - 0.745	Erosion of natural deposits; corrosion of household plumbing systems; leaching from wood preservatives
Lead (ppb) 0 Sites above AL out of 32 sampled	AL = 15	2	Jul-04	5 = 90th percentile	ND - 12.3	Erosion of natural deposits; corrosion of household plumbing systems
Disinfection By-Products						
Haloacetic Acid (HAA5) (ppb)	60	N/A	Quarterly 2004	39	ND - 39	By-product of drinking water chlorination
Total Trihalomethanes (TTHMs) (ppb)	80	N/A	Quarterly 2004	42	1.6 - 42	By-product of drinking water chlorination

Vulnerability

The presence of contaminants in drinking water does not necessarily indicate that drinking 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) 426-4791.

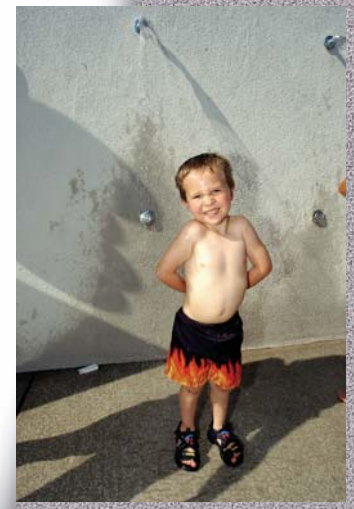
Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants 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.

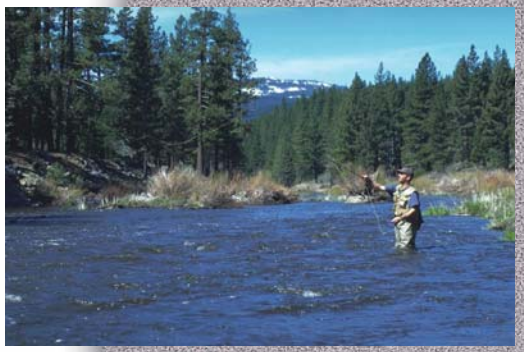
Source Water Monitoring: Surface Water							
Contaminant	**MCL**	**PHG MCLG**	**Sacramento River**		**Whiskeytown Lake**		**Possible Sources of Detected Contaminants in Drinking Water**
Primary Standards:	**Mandatory health-related standards established by the California Department of Health Services Division of Drinking Water and the United States Environmental Protection Agency**						
Turbidity			**Highest Detected**	**Range Detected**	**Highest Detected**	**Range Detected**	
Turbidity (NTU)	TT = 1 NTU	N/A	1.00	0.02 - 1.00	0.22	0.02 - 0.22	Soil Runoff
Sampled daily	TT percentage of samples<0.3 NTU		99.9%	N/A	99.0%	N/A	
Inorganic			**Sample Date**	**Detected**	**Sample Date**	**Detected**	
Aluminum (ppb)	1000	600	Aug-03	ND	Feb-04	70.2	Erosion of natural deposits; residue from some surface water treatment processes
Nickel (ppb)	100	12	Aug-03	2	Feb-04	ND	Erosion of natural deposits; discharge from metal factories
Secondary Standards:	**Aesthetic standards established by the California Department of Health Services Division of Drinking Water**						
Chloride (ppm)	500	N/A	Aug-03	1.75	Feb-04	1.35	Runoff/leaching from natural deposits
Hardness (ppm)	N/A	N/A	Aug-03	41	Feb-04	29	Found in ground and surface water
MBAS (ppb)	0.5	N/A	Aug-03	0.05	Feb-04	ND	Municipal and industrial waste discharges
Sodium (ppm)	N/A	N/A	Aug-03	5	Feb-04	2.5	Found in ground and surface water
Sulfate (ppm)	500	N/A	Aug-03	3.4	Feb-04	3	Runoff/leaching from natural deposits
Total Dissolved Solids (ppm)	1000	N/A	Aug-03	69	Feb-04	42	Runoff/leaching from natural deposits
Unregulated	**Chemicals with No Maximum Contaminant Levels**						
Boron (ppb)	AL = 1000	N/A	Mar-02	46	Mar-02	ND	Erosion of natural deposits
Vanadium (ppb)	AL = 50	N/A	Mar-02	4	Mar-02	ND	Erosion of natural deposits

Source Assessment

The City of Redding conducted drinking water source assessments for its surface water sources in July 2001 and groundwater sources in May 2002. The City's sources are considered most vulnerable to the following activities not associated with contaminants detected in the water supply: recreational use, agricultural drainage, and grazing. The City's sources are considered most vulnerable to the following activities associated with contaminants detected in the water supply: fueling areas, septic systems, biosolids application, and petroleum pipeline. The City's source water assessments are available for review by calling 530-224-6068.

Source Water Monitoring: Groundwater						
Contaminant	**MCL**	**PHG (MCLG)**	**Sample Date**	**Highest Detected**	**Range Detected**	**Possible Sources of Detected Contaminants in Drinking Water**
Primary Standards:	**Mandatory health-related standards established by the California Department of Health Services Division of Drinking Water and the United States Environmental Protection Agency**					
Inorganic						
Arsenic (ppb)	50	0.004	Aug-04, Jun-04	19	ND - 19	Erosion of natural deposits; residue from glass and electronics production waste
Barium (ppb)	1	1 (2)	Mar-02, Jun 04	192	ND - 192	Erosion of natural deposits; discharges of oil drilling wastes and from metal refineries
Chromium (ppb)	50	(100)	Mar-02, Jun 04	2	ND - 2	Erosion of natural deposits; discharge from steel and pulp mills and chrome plating
Fluoride (ppm)	2	1	Dec-02, Aug-03	0.15	ND - 0.15	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate (NO3) (ppm)	45	45	Nov-04, Jul 04	26.3	ND - 26.3	Erosion of natural deposits; runoff from fertilizer use; leaching from septic tanks, sewage
Nickel (ppb)	100	12	Aug-03, Jun-04	5	ND - 5	Erosion of natural deposits; discharge from metal
Secondary Standards:	**Aesthetic standards established by the California Department of Health Services Division of Drinking Water**					
Inorganic						
Chloride (ppm)	500	N/A	Mar-02, Aug-03	66.7	4.5 - 66.7	Runoff/leaching from natural deposits
Hardness (ppm)	N/A	N/A	Aug-03, Jul-99	152	39 - 152	Found in ground and surface water
Manganese (ppb)	50	N/A	Jul-99, Aug-03	104	ND - 104	Erosion of natural deposits
Foaming Agents (MBAS) (ppb)	0.5	N/A	Aug-03, Jun-04	ND	ND - 0.18	Municipal and industrial waste discharges
Sodium (ppm)	N/A	N/A	Mar-02, Jun-04	71	6 - 71	Found in ground and surface water
Sulfate (ppm)	500	N/A	Aug-03, Jun-04	9	3 - 9	Runoff/leaching from natural deposits
Total Dissolved Solids (ppm)	1000	N/A	Aug-03, Mar-02	233	119 - 233	Runoff/leaching from natural deposits
Unregulated	**Chemicals with No Maximum Contaminant Levels**					
Boron (ppb)	AL = 1000	N/A	Jun-02, Aug-03	415	ND - 415	Erosion of natural deposits
Radon	4000	300	Oct-99	970	690 - 970	Erosion of natural deposits
Vanadium (ppb)	AL = 50	N/A	Mar-02, Aug-03	10	ND - 10	Erosion of natural deposits



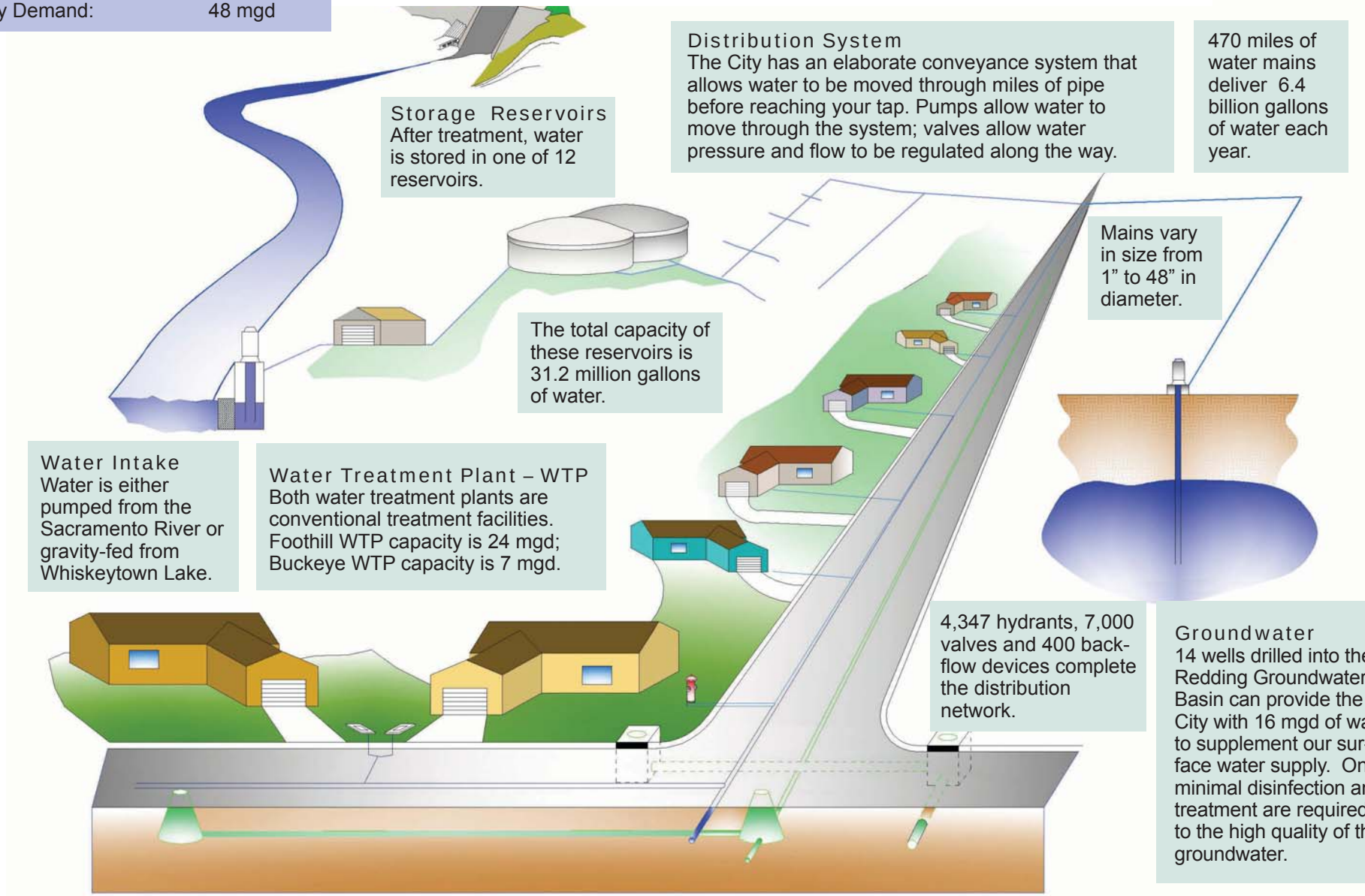


The Distribution Network

Quick Facts:

Service Area Population:	87,000
Service Connections:	26,688
Service Area Size:	57 sq. miles
Average Day Demand:	25 mgd
Peak Day Demand:	48 mgd

Did you know ...Residential water use accounts for 70% of the water consumed in Redding.



Storage Reservoirs
After treatment, water is stored in one of 12 reservoirs.

Distribution System
The City has an elaborate conveyance system that allows water to be moved through miles of pipe before reaching your tap. Pumps allow water to move through the system; valves allow water pressure and flow to be regulated along the way.

470 miles of water mains deliver 6.4 billion gallons of water each year.

Mains vary in size from 1" to 48" in diameter.

The total capacity of these reservoirs is 31.2 million gallons of water.

Water Intake
Water is either pumped from the Sacramento River or gravity-fed from Whiskeytown Lake.

Water Treatment Plant – WTP
Both water treatment plants are conventional treatment facilities. Foothill WTP capacity is 24 mgd; Buckeye WTP capacity is 7 mgd.

4,347 hydrants, 7,000 valves and 400 back-flow devices complete the distribution network.

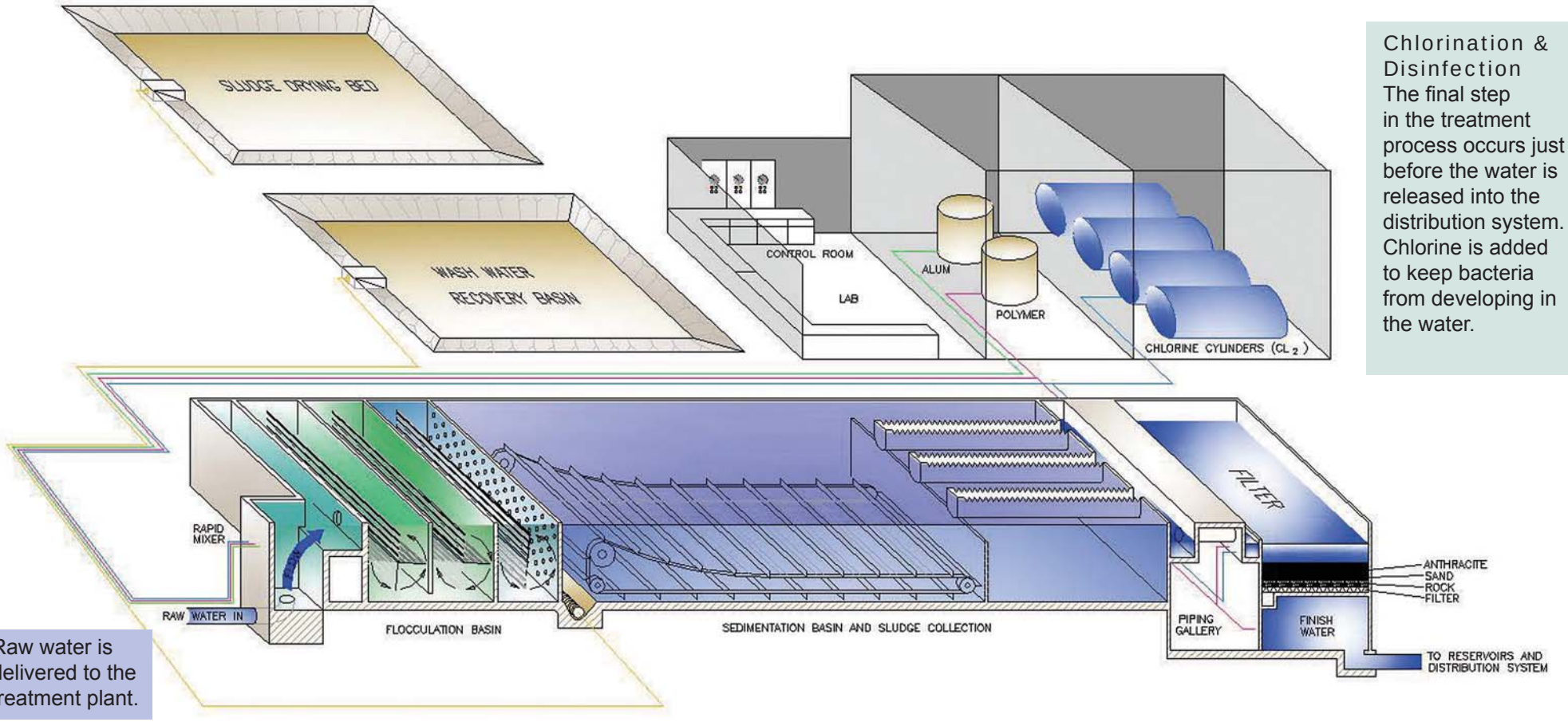
Groundwater
14 wells drilled into the Redding Groundwater Basin can provide the City with 16 mgd of water to supplement our surface water supply. Only minimal disinfection and treatment are required due to the high quality of the groundwater.

Service Connections
Customer water service connections can usually be found at the curb inside a meter box. Service lines are tapped at the main and a meter is installed.

Wastewater
The City provides sewer service to our residents. Proper wastewater collection and treatment help prevent groundwater pollution.

Storm Drain Catch Basins
Rain and run-off from over-watered lawns send pesticides, fertilizer, oil, and other contaminants into the storm drain system. This water is not treated and drains into local creeks and eventually, the river.

The Water Treatment Process



Raw water is delivered to the treatment plant.

Pre-Treatment

Chlorine, Aluminum Sulfate (Alum), and Polymers are added to the water through a chemical injection mixer. These chemicals kill germs and improve the treatment process.

Coagulation & Flocculation

The water is mixed rapidly to distribute the chemicals and then sent to a floc sedimentation basin. The chemicals bond to impurities in the water, a process called coagulation, and form large particles called floc.

Sedimentation

Floc particles settle at the bottom of the basin and are then removed to a sludge basin.

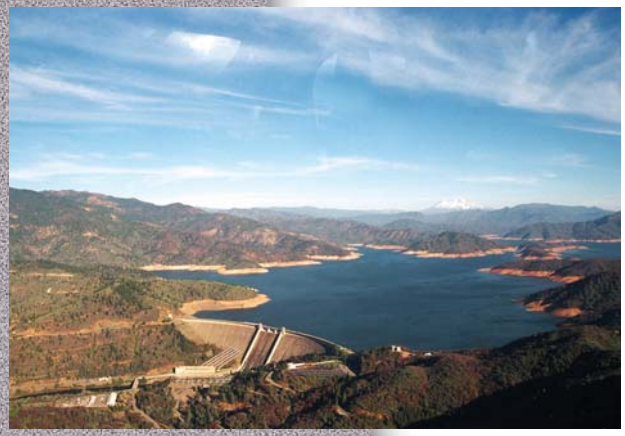
Filtration

Water then flows into the filter beds where layers of anthracite (coal), sand, and gravel remove any remaining impurities in the water.

Chlorination & Disinfection

The final step in the treatment process occurs just before the water is released into the distribution system. Chlorine is added to keep bacteria from developing in the water.

Additional Health Information



Nitrate

Nitrate in drinking water at levels above 45 ppm is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 45 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

Radon

Radon is a radioactive gas you can't see, taste, or smell. Radon can move up through the ground and into a home through the cracks and holes in the foundation. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will in most cases be a small source of radon in indoor air. Breathing air containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. For additional information, call your State radon program or call EPA's Radon Hotline (800 – SOS-RADON).

Arsenic

While your drinking water meets the current standard for arsenic, it does contain low levels of arsenic. The standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The California Department of Health Services continues to research the health effects of low levels of arsenic which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

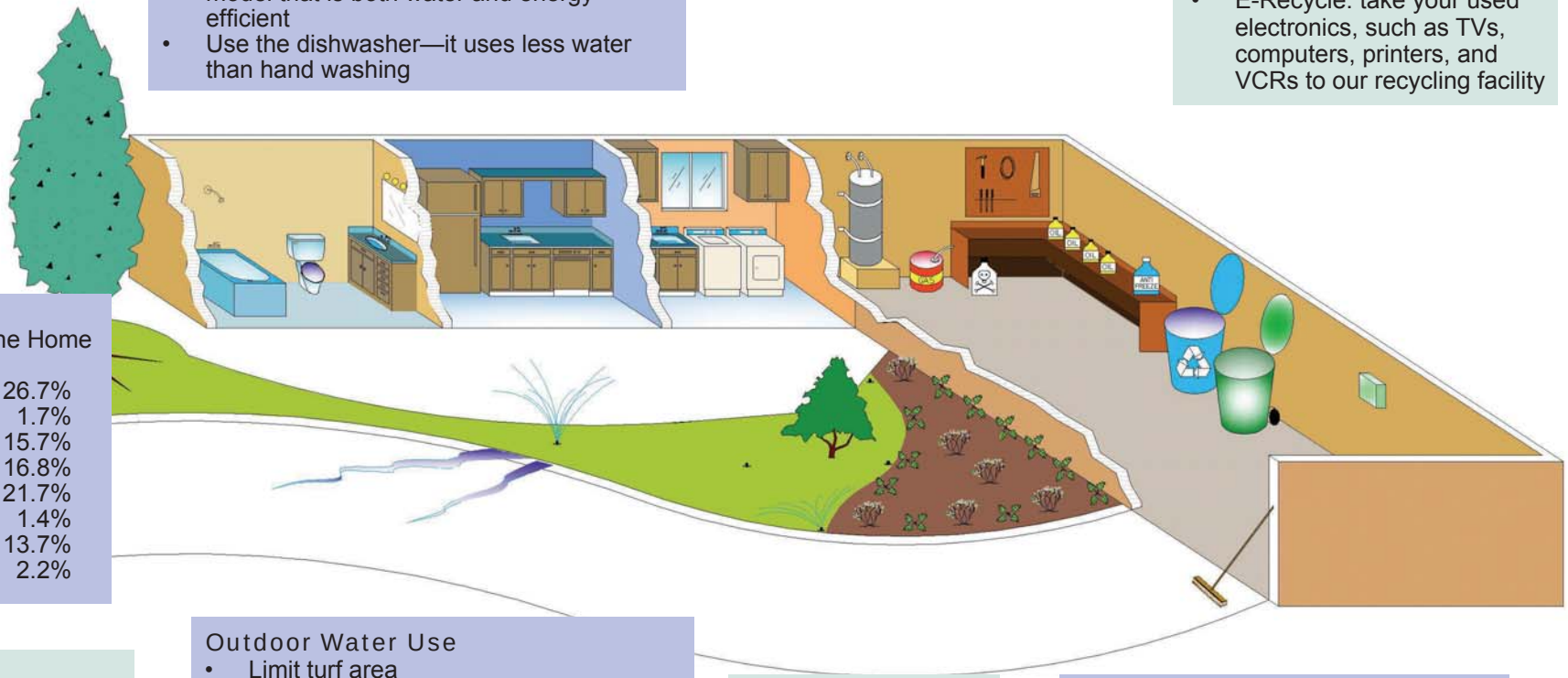
Resource Efficient Homes

Indoor Air Quality
- Vent dryer and bathroom and kitchen fans to outside
- Use water-based finishes
- Monitor harmful gases like carbon monoxide
- Keep ducts and furnaces cleaned
- Change air filters as needed.

Water Conservation & Quality
- Repair all water leaks
- Install Ultra Low Flow Toilets
- Install low flow showerheads and aerators in the bathroom
- Replace your old clothes washer with a model that is both water and energy efficient
- Use the dishwasher—it uses less water than hand washing

...conserve resources, like water and energy, reduce waste, improve indoor air quality, and reduce utility costs.

Waste Management
- Recycle cardboard, paper, glass, and plastic
- Recycle grass clippings, tree branches, and leaves
- Properly dispose of hazardous waste, such as paint, oil, pesticides, and flammable materials
- Recycle used motor oil
- E-Recycle: take your used electronics, such as TVs, computers, printers, and VCRs to our recycling facility



Quick Facts
Water Consumption in the Home

Toilets:	26.7%
Bath:	1.7%
Faucets:	15.7%
Shower:	16.8%
Washing Machine:	21.7%
Dishwasher:	1.4%
Leaks:	13.7%
Other Domestic:	2.2%

Energy Efficiency
- Install Energy Star appliances, such as clothes washers and dryers, refrigerators, and dishwashers
- Consider solar heating
- Insulate water pipes
- Install whole-house fan and ceiling fans for cooling
- Replace windows with energy efficient models
- Use solar-powered lighting outdoors and compact fluorescent lights indoors

Outdoor Water Use
- Limit turf area
- Group plants together by the amount of water used
- Install automatic sprinklers; adjust the controller monthly in response to climate
- Maintain sprinkler heads and valves
- Use native or drought resistant plants in the landscape
- Determine your soil type and water accordingly
- Mulch, mulch, mulch
- Use a rain barrel to collect storm water and use to water patio plants.
- Use a spray nozzle with a cut-off valve on the hose when washing the car

Conservation Tip
Using a broom to sweep sidewalks and the driveway saves water and money. It also keeps contaminated water from finding its way into the storm drain system, where pollution affects water quality downstream.

Green Products
- Use non-toxic or recycled content insulation
- Install floors or other finishes made from natural materials such as cork, bamboo, or linoleum, or recycled materials, such as carpet or glass tile
- Use roofing material and paint with recycled content paint
- Install cabinetry and trim made from certified sustainably harvested woods

Taking Care of our Customers

Water Main Flushing

The Water Utility has a Water Main Flushing Program that helps reduce problems we experience with taste, odor, and discoloration of the groundwater pumped out of wells over the Redding Groundwater Basin Aquifer. The water from the basin is high in iron and manganese, but below the DOHS-DDW maximum contaminant levels (MCL) for aesthetic standards. Iron and manganese are common in groundwater supplies and can lead to objectionable color, turbidity (cloudiness), and taste problems in drinking water. Each year in late spring, our crews are seen opening up fire hydrants and flushing out the water mains in order to ensure that any residue buildup inside the mains is eliminated before our higher water demand season begins.

Cross-Connection Control

The Water Utility's Cross-Connection Control Program is designed to maintain the safety and potability of the water in the distribution system by preventing the backflow of any foreign liquids, gases or other substances into the water distribution system. A cross-connection is a connection between a contaminated source and your drinking water system. Backflow occurs when the water flow is reversed due to a change in pressure and water flows backwards into and through the system. This creates a potentially hazardous situation. A backflow preventer, or cross-connection control device, is required under any circumstance where contamination may occur and all new water permits are reviewed to determine whether a backflow device is needed. The standard device required by the City of Redding is a Reduced Pressure Principle (RPP) assembly. Buildings that have fire sprinklers installed, or photolabs which use hazardous chemicals, are required to have an RPP installed.

Conservation

Our domestic water supply is limited. Environmental and financial restrictions also limit the supply available at any given time. This means our water supply has to go a long way towards satisfying all the competing interests: residential – including drinking and sanitation, manufacturing, environmental, agricultural, and recreational.

Conserving water makes good sense from an economic standpoint as well. Conserving water conserves energy – gas, electric, or both. Conserving water can reduce our monthly water and sewers bills now and postpone the construction of or eliminate the need to build expensive capital projects such as wastewater or water treatment plants that will need future maintenance.

Most of us have come to realize efficient management of our natural resources is a necessity if we are to ensure an adequate supply of water for our future needs. The Water Utility's Water Conservation Program is a public outreach program, and community education has been our primary focus. Our goal is to increase awareness about our water supply and water quality while encouraging conservation of this precious resource. Conservation materials and tours of our treatment plants are available. Program information, including scheduling presentations or speakers, can be obtained by calling 530-224-6032.

Meter Replacement Program

Water meters are a critical part of the water system infrastructure and the basis for ensuring sufficient revenues are generated in order to maintain a financially viable water utility. The Water Utility maintains over 25,000 water meters that range in size from 5/8” through 10”. Properly operating meters help the City meet State and Federal guidelines that require an accounting of water consumed by both residential and commercial customers. The City’s water sources are of such high quality that the life expectancy of the typical water meter exceeds normal operating parameters. Meters are repaired as necessary and replaced at a rate of about 10% per year.

Water Main Replacement Program & Water Breaks

The Water Main Replacement Program is designed to replace aging or deteriorated water mains as well as mains that provide insufficient fire flows. Older pipes are often of size and type that affect both water flow and quality. The Distribution Division maintains a list of water mains to be replaced in our ten-year plan. Both our biennial budget and the Water Master Plan reflect these capital expenditures and the list is prioritized based on records of repairs made, the age of the pipe, and fire flow requirements within the area. The list is modified every year to make sure it complies with the stated criteria.

Water breaks occur throughout the distribution system. Mains and service lines are susceptible to factors such as corrosion, deterioration of fittings, changes in water pressure, traffic impact above the pipe, adverse weather conditions and occasionally, excavation being performed in the surrounding area.

When mains are replaced or main or service line repairs are made, customers may experience temporary interruption in water service as well as restricted street or sidewalk access. When it is feasible, we notify our customers in advance; however, emergency repairs or replacements do happen. The Water Utility makes every effort to minimize the inconvenience to our customers and we appreciate your patience as we work to get the water turned back on.

Fire Hydrants

The fire hydrant is one of the most important parts of the water distribution system and often one of the most ignored. Fire hydrants stand idle for long periods of time and are vulnerable to damage, yet are expected to work efficiently in emergencies.

The Fire Hydrant Program involves inspection, oiling, and exercising of each hydrant in the system, either public or private. Any defects to the hydrant are placed on a work order for repair. Regularly scheduled inspections of hydrants are necessary to ensure satisfactory operating conditions.

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 Meeting. 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 http://www.ci.redding.ca.us/water/index.html

Project Manager	Pamela Clackler
Designer	Marlys Johnson-Roberts
Illustrations	Ralph Bentrim
Printing	Platinum Printing, Inc.
Crew Photos	Barbara Panike

Este informe contiene información muy importante sobe su agua beber. Tradúzcalo ó hable con alguien que lo entienda bien.

Definitions and Abbreviations

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

Best Available Technology (BAT): Used to achieve compliance with MCLs.

CDC: Centers for Disease Control.

Detection Level: Lowest level that a contaminant can be analyzed.

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.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health.

PHG: Public Health Goal

N/A: Not applicable

ND: Not detected in the analysis of the sample.

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

pCi/L: Picocurie per liter – measurement of radiation in water.

ppm: Parts per million, or milligrams per liter.

ppb: Parts per billion, or micrograms per liter.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

>: Symbol for Greater Than.

<: Symbol for Less Than.

USEPA: United States Environmental Protection Agency.

REDDING MUNICIPAL UTILITIES

777 Cypress Avenue
Redding, Ca 96001

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