Riverside Public Utilities

2001 Water Quality Annual Report

Riverside Public Utilities is committed to the highest quality water and electric services at the lowest possible rates to benefit the community.



Dear Valued Water Customer,



Each year Riverside Public Utilities produces an Annual Water Quality Report to provide you with information about the quality of your drinking water.

In addition, this year's report includes information on the City of Riverside's water resources and how we maintain quality water. We have also included a map to help you understand how water gets to our city.

As you will see from reading this report, our water met or exceeded all state and federal drinking water standards in 2001.

Customers can be assured that the Board of Public Utilities and Utility staff are committed to maintaining these standards. We are equally committed to maintaining competitive water rates, and to reducing the level of detectable water contaminants. Our goal is to safeguard the supply and quality of our water resources for the next 100 years.

We hope you find our report informative. We encourage your comments, and welcome you to attend our Board of Public Utilities meetings held at Riverside City Hall, the first and third Fridays of each month at 8:15 a.m.

Sincerely,

Tom Econs

Thomas P. Evans Public Utilities Director

Table of Contents

Director's Message1
Our Water Story2
Recent Developments
Map
Primary Standards Table
Definitions
About This Data Report
Secondary Standards Table9
EPA Message
Non-English Translations10

For More Information

Should you have any questions about information in this report, please use the attached postagepaid postcard with your comments. Additional information may be obtained by visiting our web site at **www.riversidepublicutilities.com**, or by calling our Water Department at one of the numbers listed below.

Water Ouality: (909) 351-6331

Source Water Protection: (909) 826-5612

24-hour Water **Emergencies:** (909) 687-0791



The City of Riverside established its Water Utility in 1913. Today, the Utility operates 47 domestic wells, 18 irrigation wells, 16 reservoirs, 4 treatment plants, 6 chlorination stations, 38 pumping stations, and over 900 miles of distribution pipelines throughout the city.

The water system also serves as a critical part of the fire protection system for the city, with pipelines, reservoirs, and other facilities designed to meet growing safety demands.

Water Supply

Do you know where your water comes from? Northern California? The Colorado River? Surprise! It's neither. To find Riverside's water supply, you have to look deep in the ground -1,200 feet deep. Water, which begins as pure rain and snow in the San Bernardino Mountains, settles in large pools underground after being naturally filtered through gravel and sand. Water wells then pump the water up from below through two large transmission lines, up to five feet in diameter, to reservoirs within the City of Riverside.

The founders of Riverside settled in this region in large part because they identified an abundant water supply for their planned agricultural colony. The same water supplies that were established back in 1870 to feed the growing citrus industry still serve our community today.





Our Water Story

Water Quality

Our water staff diligently monitors state and federal regulatory activity. We also participate in the standard setting process to represent your best interests. Meanwhile, the following are some of the programs that help us deliver the highest quality water to you on a daily basis.

Water Testing Program

In 2001, the city collected over 10,000 water samples to test for a variety of potential contaminants. Tests are

performed by an independent laboratory, and are the basis for the information in the data tables on pages 7 and 8.



Virtually all of the City of Riverside's water supply comes from wells in the Bunker Hill Basin in San Bernardino and the Riverside Basin in Riverside. Protecting these water supplies is imperative to maintain the level of service and quality that **Riverside Public Utilities** customers have come to expect. That is why we are working to protect our water sources from future contamination.

> In August of 2000, Riverside Public Utilities completed a study to assess the vulnerability of its drinking water wells in the upper Riverside Basin. The study indicated that sources of

possible contamination are septic systems, composting activities, and a variety of business practices. As a result, a protection plan addressing septic systems was developed.





The assessment of wells in the Bunker Hill Basin is currently underway through a cooperative study with other water purveyors in the area. Trichloroethylene (TCE) and perchlorate contamination plumes are the major sources of contamination in this basin. TCE is being removed by treatment facilities. Health effect studies and regulation regarding perchlorate are still under review by the United States Environmental Protection Agency.

Riverside Public Utilities and the Santa Ana Watershed Project Authority (SAWPA) are jointly funding the Riverside Groundwater Basin Study. This study includes Riverside Basin characterization, a hydrology study, and groundwater modeling as a tool to assess the basin's capability for additional production and water supply planning.

Staff is now developing protective programs and policies to help preserve our precious resources for future generations.

Treatment Plants

Delivering quality water is our number one priority. That is why all water that is provided to

the City of Riverside is tested daily to ensure that only the highest quality product is delivered to our customers. Additionally, the Utility has built and operates several treatment plants to remove contaminants from our water supplies.

Three treatment plants in the San Bernardino area remove trichloroethylene (TCE). On average, TCE is below detectable levels in our water supply. Plans are now under way to also install perchlorate removal capacity at these plants within the next year.

A recent legal settlement with the manufacturers of a now banned herbicide containing dibromochloropropane (DBCP), formerly used to control nematodes in orange groves, has enabled

Riverside to install a DBCP treatment plant near the Ab Brown Soccer Complex. A second DBCP treatment plant is being built in the Riverside Basin and should be complete in December 2002. The settlement also provides funding for additional treatment plants as needed.

Chlorination

Riverside also operates several chlorination plants. Chlorine is added to the water to eliminate any bacteria that may enter the system. A slight chlorine "residual" is maintained throughout the distribution system to prevent contamination along the 900 miles of pipelines and reservoirs. If this chlorine residual taste is noticeable to you, it can be removed by keeping the water overnight in the refrigerator.

Backflow Prevention

Backflow prevention devices are placed on connections to large industrial customers

and other facilities to prevent potentially contaminated water from re-entering the system in case of low pressure or other system disturbances. The city was a pioneer in developing such a program, and now monitors over 2,300 such devices on a regular basis to protect the integrity of our water supply.

System Reliability

While Riverside has planned for adequate supplies of water to meet the future needs of our customers, the system itself must be designed to safeguard those supplies during emergencies, and provide adequate flows for fire protection purposes. Several projects are underway to assure future reliability.

North Orange Pipeline

Riverside is presently served by two major transmission lines from San Bernardino. However, these pipes cross two major earthquake faults. This places the City of Riverside's water supply in a vulnerable position, even though we have emergency connections to Western Municipal Water District if needed. To help alleviate this situation, the Utility is presently constructing a new five-foot diameter pipeline to water wells in the North Orange area, closer to the city. The source for this new supply of water will be from wells treated to remove DBCP. Both the pipeline and treatment facilities are funded through settlements with others.

Pipeline Replacement Program

The City of Riverside has also adopted a proactive program to replace aging, leaking pipes throughout the city. With new mains in place, city residents benefit from increased flow, higher pressure, and more reliable service.

Recent developments in the standard setting process for several chemical constituents of concern such as Arsenic, Chromium VI, and Perchlorate have received a lot of media attention. While this Water Quality Annual Report only addresses actual test results for 2001, Riverside keeps a close eye on these chemicals and how they affect our water system.

Currently, there are no Public Health Goals (PHG's) set for these chemicals, however the Utility tests for and complies with all water quality standards concerning these constituents.

Arsenic: The National Drinking Water Standard for Arsenic, a naturally occurring mineral known to cause health problems in humans, has been 50 parts per billion (ppb). The standard was lowered to 10 ppb in January 2002, to be implimented in 2006. In 2001, RPU delivered water, which on average had an arsenic level of 3.9 ppb, with a range from not detectable to 6.8 ppb. While well within even the newer regulatory standards, the Utility is determining steps to reduce arsenic levels through treatment, new wells, and enhanced blending of system sources.





Storage Reservoirs

Reservoirs are placed at strategic locations throughout the City of Riverside. These help the Utility provide water at adequate pressure to higher elevations, provide water for emergencies, and ensures water reserves are on hand for fire fighting. Should a disaster affect our water supplies, these reservoirs could serve the City of Riverside's needs for approximately three to five days.

> Several more reservoirs are planned, and the Utility is actively purchasing property for locating these in the future. Contrary to most area utilities, you may not

have noticed our reservoirs, as the City Council has authorized the additional funds to place new facilities underground.

Recent Developments

Chromium VI: Chromium is a naturally occurring element, the most common forms of which are chromium III, an essential dietary nutrient, and chromium VI (hexavalant chromium), which can be toxic. There is currently no regulation governing this element, however Riverside Public Utilities is participating in a Department of Health Services (DHS) chromium VI monitoring and occurrence study to determine future MCL and treatment costs. In 2001, Riverside delivered water with average chromium VI levels of 2.4 ppb, a level consistent with previous draft goals published by the DHS.

Perchlorate: Perchlorate salts are used in solid rocket propellants and other industrial applications. Recently, the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) set a draft health goal of 6 ppb for perchlorate based on their risk assessment. Perchlorate levels in Riverside water supplies averaged 6.4 ppb in 2001.

While firm action levels and goals are still being developed, the Utility has reduced pumping from perchlorate affected wells and is actively participating in research to develop perchlorate treatment technologies. Some perchlorate treatment plants are expected to be in operation in 2002.





Riverside Public Utilities 2001 Water Quality Report Primary Standards: Mandatory Health Related Standards

	State MCL	STATE PHG OR MCLG	RIVERSIDE Average Range		Sources of Contamination
MICROBIOLOGICAL Total Coliform (a)	5%	0%	0%	0	Naturally present in environment
CLARITY (NTU) Turbidity	0.5	NS	0.1	0 - 0.4	Naturally present in environment
REGULATED ORGANIC Total Trihalomethanes	100 ppb	NS	11.1 ppb	0 - 95.7 ppb	By-product of disinfection treatment
"TIHMs" (b) Dibromochloropropane "DBCP"	200 ppt	1.7 ppt	25 ppt	ND - 60 ppt	Banned nemotocide still present due to agricultural
TRICHLOROETHYLENE (TCE) ·····	5 ppb	0.8 ppb	ND	ND - 0.6ppb	activities Discharge from metal decreasing sites & other factions
REGULATED INORGANIC Nitrate (NO3)	45 ppm	45 ppm	21 ppm	13 - 25 ppm	Naturally present in environment
Fluoride	2 ppm	1.0 ppm	0.6 ppm	0.4 - 0.7 ppm	Naturally present in environment
Arsenic	50 ppb	NS	3.9 ppb	<2 - 6.8 ppb	Erosion of natural deposits
RADIOLOGICAL Gross Alpha (c)	15 pCi/L	NS	9 pCi/L	6 - 13 pCi/L	Erosion of natural deposits
Uranium (c)	20 pCi/L	0.5	8 pCi/L	4 - 13 pCi/L	Erosion of natural deposits
LEAD/COPPER (AL) (90% Household Tap) Lead (d) Copper (d)	15 ppb 1300 ppb	2 ppb 170 ppb	<5 ppb 530 ppb	<5 - 13 ppb <50 - 570 ppb	Internal corrosion of home plumbing Internal corrosion of home plumbing
COLLECTION RULE (ICR) Trihalomethanes (THM4) Haloacetic Acids (HAA5) Total Chlorine Residual	100 ppb NS NS	NS NS NS	2.8 ppb 3.1 ppb 0.4 ppm	0 - 5.9 ppb 0 - 10.9 ppb 0.3 - 0.5 ppm	By-product of disinfection treatment By-product of disinfection treatment
Additional Monitoring Radon	NS	NS	434	130 - 620 pCi/L	Naturally present in environment
Regulated contaminants with no MCLs	ACTION	STATE PHG			
Chromium VI	NS	NS	2.4	2.4	
Perchlorate	AL 18	NS	6.4	<4-12 ppb	
Vanadium	AL 50	NS	9.8	6-12 ppb	

Definitions

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 (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the 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. MCLGs are set by the U.S. EPA.

Public Health Goal (PHG) The level of a contaminant in drinking water below which there is no known or expected health risk. PHGs are set by the California EPA.

Regulatory Action Level (AL) The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Provisional Action Level (PAL) The provisional concentration of a contaminant that, if exceeded, triggers treatment or other requirements which a water system must follow.

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

Parts Per Million (PPM) One part per million corresponds to one minute in two years or one penny in \$10,000.

Parts Per Billion (PPB) One part per billion corresponds to one minute in 2,000 years or one penny in \$10,000,000.

Parts Per Trillion (PPT) One part per trillion corresponds to one minute in two million years or one penny in \$10,000,000,000.

PicoCuries Per Liter (pCi/L) A measure of the radioactivity in water.

Nephelometric Turbidity Units (NTU) A measure of suspended material in water.

Micromhos (µMHOS) A measure of conductivity (electric current) in water.

- ND Not detected at the detection limit for reporting. NS No standard.
- GPG Grains per gallon of hardness (1 gpg = 17.1 ppm). Less than the detectable levels.
- (a) Results of all samples collected from the distribution system during any month shall be free of total coliforms in 95% or more of the monthly samples.
- (b) EPA is expected to promulgate a Disinfection By-products Rule in 2002. Results based on samples collected from designated points throughout the distribution system.
- (c) EPA promulgated a Radionuclide Rule on December 7, 2000. Effective 2003.
- (d) The Lead and Copper Rule requires that 90% of samples taken from drinking water taps in program homes
- must be below the Action Levels.

About This Data Report

Riverside Public Utilities tests for over 200 contaminants in its water system. This report provides data from sampling conducted throughout 2001. Only those constituents detected in our system are listed here. For a listing of additional chemicals tested, please call Cindy Norried at (909) 351-6331.

Nitrate in drinking water at levels above 45 mg/L 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 an infant's blood to carry oxygen, resulting in a 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 certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

Riverside provides drinking water which on average is at 21 ppm and has a range from 13 ppm to 25 ppm during the year. On eight days during 2001, Riverside provided water that was greater than half the MCL, but did not exceed 45 ppm. The California Department of Health Services has set the MCL for nitrate at 45 ppm. Riverside has 47 wells that are blended to comply with drinking water standards. The city conducts extensive monitoring of the blend operations. Seasonal variation in demand and flow, in addition to system maintenance and repair, impact the nitrate levels during the year.



Secondary Standards: Aesthetic Standards

	1. C				
		STATE	SOURCES OF		
		MCL	AVERAGE	RANGE	CONTAMINATION
C	DLOR UNITS	15	<3	<3	Naturally present in environment
0	OOR THRESHOLD	3	1	<1 - 2	Naturally present in environment
C	HLORIDE	500 ppm	22 ppm	20 - 47 ppm	Naturally present in environment
Sı	JLFATE	500 ppm	61 ppm	51 - 81 ppm	Naturally present in environment
To1	TAL DISSOLVED SOLIDS	1000 ppm	325 ppm	280 - 380 ppm	Naturally present in environment
Spe	CIFIC CONDUCTANCE	1600 µ mho	544	470 - 610	Substances form ions in water
C	DRROSIVITY	Non-Corrosive	(- 0.13)	(-0.38) - 0.07	Natural or industriall influenced balance o hydrogen, carbon, au oxygen in the water; affected by temperature and oth factors.
P	H UNITS	NS	7.5	7.2 - 7.7	
H , (Ca	ARDNESS	NS	208 ppm (12 gpg)	170- 250 ppm	Naturally present in environment
So	DDIUM	NS	37 ppm	28 - 41 ppm	Naturally present in environment
C	ALCIUM	NS	65 ppm	53 - 69 ppm	Naturally present in environment
P	DTASSIUM	NS	3 ppm	1 - 4 ppm	Naturally present in environment
M	AGNESIUM	NS	11 ppm	7 - 19 ppm	Naturally present in environment

Information Collection Control Rule: This group was tested as part of EPA's Information Collection Rule (ICR). The analysis for the ICR was done over an 18-month period beginning July 1998 through December 1999 to gather information on additional by-products of disinfection. The ICR data will assist the EPA in setting future disinfection by-product regulations. Results were based on the finish water entry point to the distribution system.

Additional Monitoring: There are no federal and state standards at this time for these constituents listed on page 7. Additional monitoring for unregulated and regulated contaminants with no MCLs helps the EPA and California DHS to determine where certain contaminants occur and whether they need to be regulated.

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.

Radon: Radon is a naturally occurring gas formed from the normal radioactive decay of uranium. It is a colorless, odorless, tasteless, chemically inert, and radioactive gas found virtually everywhere on earth. The U.S. EPA recommends that homeowners take remedial action if the indoor air radon level in their home exceeds 4.0 PicoCuries. The radon in indoor air attributable to water is minor compared to contributions from the soil, or even the outdoor air. For information on radon call the State Department of Health Services Radon Information line at 1-800-745-7236.

Committed To Serve



Riverside Public Utilities Water Division employees are committed to providing you with only the highest quality drinking water in the safest way possible.

An Important Message About Drinking Water Sources From The U.S. EPA

Regulations: In order to ensure that tap water is safe to drink, U.S.EPA and the California Department of Health Services (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must provide the same protection for public health. Important Health Information: Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 people, 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 EPAs Safe Drinking Water Hotline. 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 the water

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 land or through the ground, it dissolves naturally-occurring minerals and in some cases radioactive materials, and can pick up substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include: 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, that can be naturally-occurring or result from urban storm water runoff, industrial 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

or domestic wastewater discharges, oil and gas production, mining or

storm water runoff, and septic systems. poses a health risk. More information about contaminants and

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

> This report contains important information about your drinking water. Translate it, or speak with someone who understands it. **Non–English Translations**

Este reporte contiene información muy importante sobre su agua potable. Tradúzcalo ó hable con alguien que lo entienda bien.

يحتوي هذا التقرير على معلومات هامة عن مياه الشرب . ترجم هذه المعلومات أو تكلم مع شخص يفهمها -

សេចក្តីរាយការនេះមានផ្លុកពណ៍មានសំខាន់អំពីទីក ដែលលោកអ្នកទទួលទាន់ បកប្រែបុនិយាយពិភាភ្ញា ជាមួយនរណាម្នាក់ដែលយល់អំពីសេចក្តីនេះ

ຂໍແຈ້ ເຊ່າວສາຄັນ ກ່ຽວກັບນ້ຳປະປາຫີ ພວກເຮົາໃຈ້ຢູ່ເປັນປະຈຳ. ກ້າທ່ານບໍ່ເຂົ້າໃຈ ແລະຢາກຮູ້ລາຢລະອງດເພີ້ມເຕີມກະລຸນາ ຕິດຕໍ່ສອບຖາມ



이 보고서 에는 여러분이 마시는 물어 대한 정보가 드러 있습니다 가든지 또는 이것을 이해 하는 사람과 이야기 新午台八皇

potential health effects can be obtained by calling the EPAs

Safe Drinking Water Hotline at 1-800-426-4791.

このレポートには皆さんが飯む水 に崩する情報が入っています これを 翻訳するが又比だれがこれを理解する 人と話して下さい

Báo cáo này có những chi tiết quan trọng về nước uống của quí vi. Hãy dịch ra, hoặc nói chuyện vối người nào hiểu biết vê' vấn đê' này.

