

The image features a water treatment facility with several large, white cylindrical tanks and associated piping in the foreground. In the background, there are snow-capped mountains under a clear blue sky. The entire scene is framed by a large, light blue circular graphic element. The text is overlaid on the image in a blue, stylized font.

City of Riverside
Public Utilities

2002

Water Quality Annual Report

Our Mission –

Committed to the

highest quality

water and

electric

services

at the lowest

possible rates

to benefit the

community.

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FOR MORE INFORMATION

Should you have any questions about information in this report, please use the attached postage-paid postcard. Additional information may be obtained by visiting our Web site at riversidepublicutilities.com or by calling us at one of the numbers listed below.

WATER QUALITY
(909) 351-6331

SOURCE-WATER PROTECTION
(909) 826-5612

24-HOUR WATER EMERGENCIES
(909) 687-0791

Dear Valued Water Customer,

The City of Riverside is dedicated to providing quality water at low rates for this and future generations. Sufficient water supplies to serve California's burgeoning population is a concern to us all.

Riverside Public Utilities follows three principles to provide high-quality water to our customers:

1. Protect our groundwater sources.
2. Treat and remove contaminants in our water supplies.
3. Ensure our system practices are top quality.

To us, protecting water quality is a 24-hour-a-day job. I assure you that water delivered to our customers has met all quality standards adopted by the state and the federal governments. Drink Riverside's water with peace of mind. Our entire staff is dedicated to providing a safe and healthy water supply at the lowest possible cost. This report demonstrates our commitment.

We welcome you to attend our Board of Public Utilities meetings at Riverside City Hall, held at 8:15 a.m. on the first and third Fridays of each month.

Sincerely,



Thomas P. Evans

City of Riverside Public Utilities Director



Protecting Our Water Source & Ensuring Quality

WATER QUALITY

This year's annual report focuses on the process of protecting your water quality.

1. PREVENTION

The City of Riverside obtains its water from underground sources replenished by rain and snow-melt in the San Bernardino mountains.

The City is a leader in working to prevent pollution and managing our water basins to provide a quality

water supply for the future. You can help this effort by not dumping solvents, cleaners, or paints, etc., in storm drains or on the ground. Take them to an appropriate disposal facility or they may end up in the water supply.

The City has completed source-water assessment studies to identify and rank possible contaminating activities that might impact drinking water wells. The source-water assessment for the Riverside Basin area was completed in August 2000 and concluded that septic systems pose the greatest threat to the drinking water supply. The City Council took action to not allow any more septic systems in the sensitive area, and a similar resolution is under discussion by the County of

Riverside. The City plans to increase production from the Riverside Basin and conducts groundwater studies to protect the quality and quantity of our water supply.

The City and other water utilities completed a source-water assessment study for Bunker Hill Basin in San Bernardino in October 2002. The contamination plumes (TCE, DBCP and perchlorate) in the basin are being mitigated, and the water supply is being treated.

The source-water assessment reports were submitted to the Department of Health Services (DHS). Copies are available at Riverside Public Utilities Water Resources, and the DHS San Diego office.



2. WATER TREATMENT

Contaminants have been detected in regional underground water supplies. The Regional Water Quality Control Board and the City have been very effective in identifying the organizations responsible for the pollution. The City has been very successful in obtaining necessary funding from these responsible organizations to clean up the contamination and ensure a quality water supply.

In 1998, the first treatment plant to remove trichloroethylene (TCE), a degreaser/cleaner used in industry, was placed in service on the Riverside water system.

Today, the City operates five treatment plants to remove TCE, perchlorate and DBCP, or dibromochloropropane, a pesticide used on citrus groves. The cover photo on this annual report shows one of these plants. The rendering on pages five and six provide an overview of the extensive treatment systems operated by the Utility Department and also depicts the basic operating principles of the city's treatment plants.

The Utility also operates three chlorination stations that use chlorine gas or chlorine dioxide to kill harmful bacteria that may get into our water supply. State regulation requires that sufficient chlorine is mixed with the water supply to assure that a small amount of chlorine residual is maintained in the system. The chlorine residual acts as a barrier to prevent bacteria contamination. This protects our customers from accidental contamination or from potential contamination introduced by the deliberate actions of others.

3. OPERATING PRACTICES

The third and final defense against contamination of the Riverside water system is the high quality design and operation of the system. The following items are some of the active programs the City uses to safeguard the distribution system itself.

PIPELINE REPLACEMENT PROGRAM - Under this program, the City replaces approximately 35,000 feet of aging and leaking pipeline each year. This maintains the integrity of the distribution system and prevents leaks.





FLUSHING - In order to preserve water quality, the distribution system is designed to maintain a continuous minimum flow rate. In some areas, if the water demand is not sufficient, crews will periodically flush the system at the fire hydrant to prevent stagnant water.

SECURITY - Security has always been important to us, which is why we regularly patrol our water system. We recently completed a comprehensive site security analysis funded by the US EPA. A new System Control and Data Acquisition System will be completed by this summer to greatly enhance our ability to remotely monitor and control the system.

MONITORING - The city collected more than 10,000 water samples to test for a variety of potential contaminants in 2002. Tests are performed by an independent laboratory and are the basis for the information in the data tables included in this report.

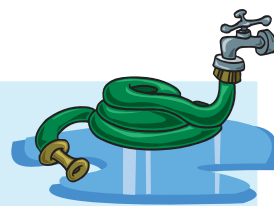


NORTH ORANGE WELLFIELD TRANSMISSION MAIN PROJECT - A recently completed \$10 million transmission line project connecting wells in northern Riverside greatly enhances the quality of our water supplies and assures the high-quality water to all customers by serving them through a central reservoir system.

EMPLOYEE TRAINING AND CERTIFICATION - City water employees are required to obtain state certification to perform critical functions. We assure the quality and safety of our water supply by performing critical connections to our water system with our own trained and certified operators and pipefitters.

BACKFLOW PREVENTION 2002 - Backflow prevention devices prevent contaminated water from entering the distribution system due to back-siphonage or back pressure. Backflow prevention devices are required on service connections where a hazard assessment has determined the actual or potential risk.

In 2002, the Utility ensured that more than 2,500 backflow devices installed in our system met the state's annual testing requirement. More than 225 additional devices were installed to provide protection on new services.

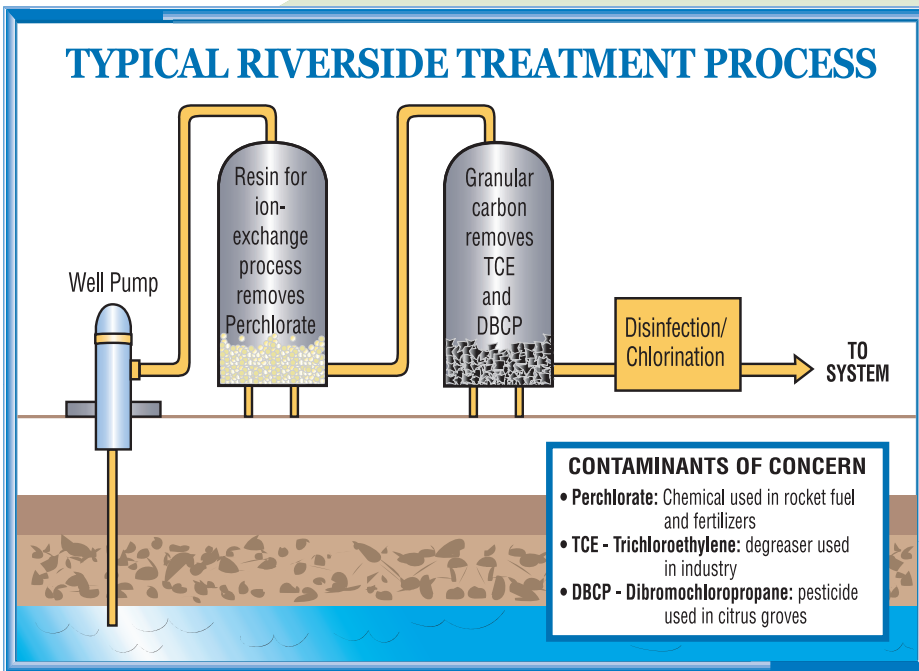


HOW CAN YOU HELP?

The most common backflow situation is the ordinary garden hose. Hoses are often left lying on the ground and may become contaminated with fertilizer, animal waste, and garden chemicals. This creates a potentially dangerous situation if these contaminants enter the system, which is why we require a backflow device. Common hazards are: hoses submerged in swimming pools, hoses attached to service sinks with the end submerged in detergent, and chemical sprayers attached to hoses.

CITY OF RIVERSIDE WATER

TYPICAL RIVERSIDE TREATMENT PROCESS



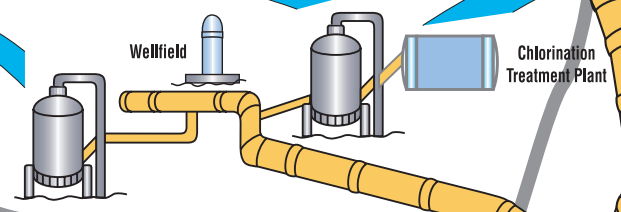
- CONTAMINANTS OF CONCERN**
- **Perchlorate:** Chemical used in rocket fuel and fertilizers
 - **TCE - Trichloroethylene:** degreaser used in industry
 - **DBCP - Dibromochloropropane:** pesticide used in citrus groves



TCE Treatment Plant

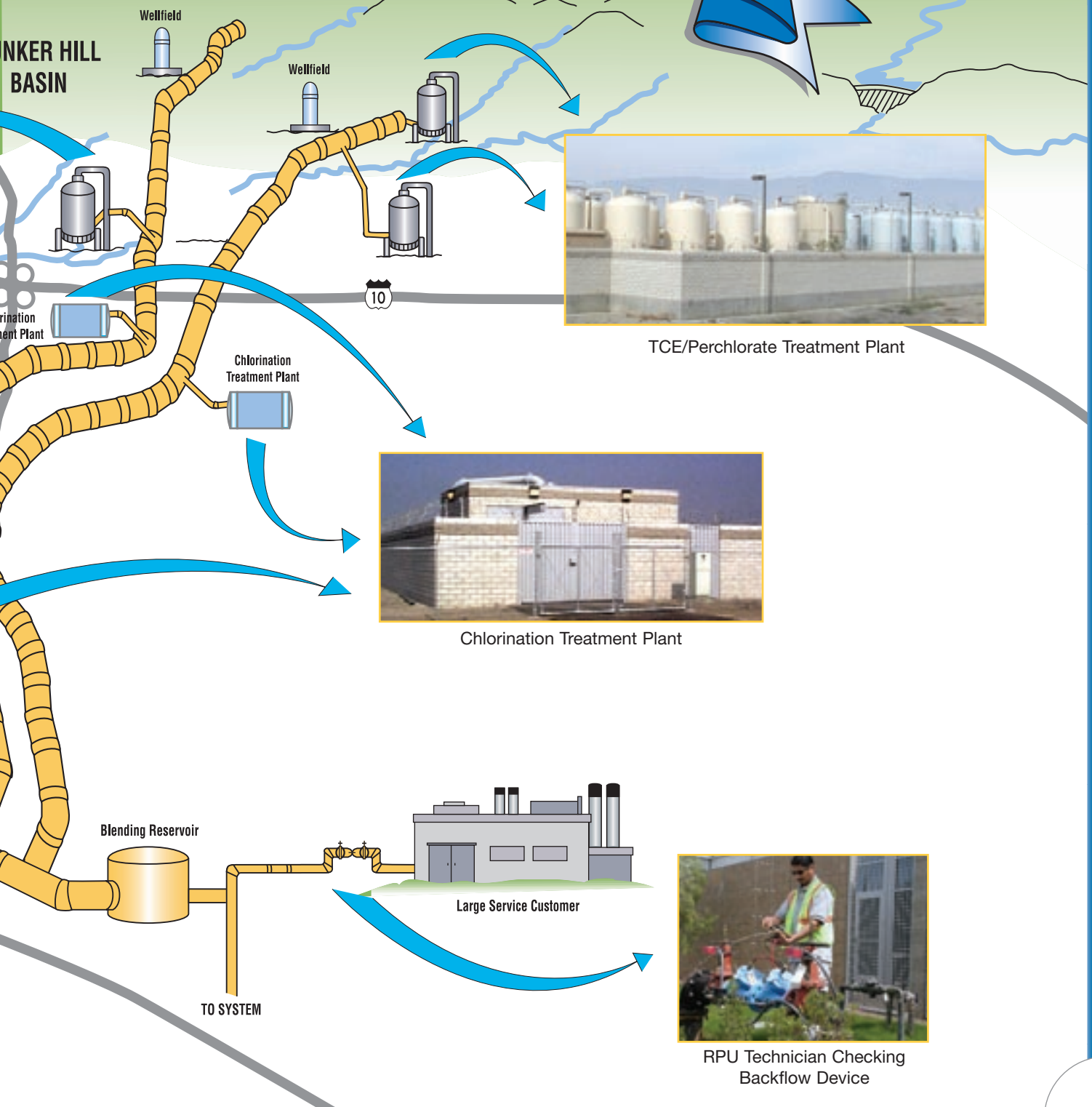


DBCP Treatment Plant



RIVERSIDE BASIN

WATER TREATMENT PLANTS



RIVERSIDE PUBLIC UTILITIES 2002 WATER QUALITY REPORT

PRIMARY STANDARDS: MANDATORY HEALTH-RELATED STANDARDS

PERCENT SYSTEM SOURCE - GROUND WATER 99.2%

CONTAMINANT	STATE MCL	STATE PHG, MCLG OR MRDLG	RIVERSIDE		SOURCES OF CONTAMINATION
			AVERAGE	RANGE	
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 "TTHMs" ppb -----	80 ppb	NS	2.4 ppb	ND - 67.1 ppb	By-product of drinking water chlorination
Halocetic Acids "HAA5" -----	60 ppb	NS	0.2	ND - 4.5	By-product of drinking water disinfection
Chlorine -----	4 ppm	4 ppm	0.46	.37 - .74	Drinking water disinfectant added for treatment
Control of DBP precursors -----	Treatment Requirement	NS	ND	ND - 1.8	Various natural and man-made sources
Total Organic Carbon "TOC" ppb -----					
Dibromochloropropane "DBCP" -----	200 ppt	1.7 ppt	26 ppt	ND - 54 ppt	Banned nematocide still present due to agricultural activities
Trichloroethylene (TCE) -----	5 ppb	0.8 ppb	ND	ND - 0.5 ppb	Discharge from metal degreasing sites & other factions
Regulated Inorganic					
Nitrate (NO3) -----	45 ppm	45 ppm	21 ppm	15 - 26 ppm	Naturally present in environment
Fluoride -----	2 ppm	1.0 ppm	0.7 ppm	0.5 - 0.8 ppm	Naturally present in environment
Arsenic -----	50 ppb	NS	2 ppb	<2 - 5 ppb	Erosion of natural deposits
Radiological					
Gross Alpha (b) -----	15 pCi/L	NS	9 pCi/L	5 - 12 pCi/L	Erosion of natural deposits
Uranium (b) -----	20 pCi/L	0.5	8 pCi/L	4 - 13 pCi/L	Erosion of natural deposits
Lead/Copper (AL) (90% Household Tap)					
Lead (c) -----	15 ppb	2 ppb	<5 ppb	<5 - 6 ppb	Internal corrosion of home plumbing
Copper (c) -----	1,300 ppb	170 ppb	380 ppb	<50 - 760 ppb	Internal corrosion of home plumbing
Information					
Collection Rule (ICR)					
Trihalomethanes (THM4) -----	100 ppb	NS	2.8 ppb	0 - 5.9 ppb	By-product of disinfection treatment
Halocetic Acids (HAA5) -----	NS	NS	3.1 ppb	0 - 10.9 ppb	
Total Chlorine Residual -----	NS	NS	0.4 ppm	0.3 - 0.5 ppm	
Additional Monitoring					
Radon -----	NS	NS	566	380 - 670 pCi/L	Naturally present in environment
Regulated contaminants with no MCLs					
	ACTION LEVEL	STATE PHG OR MCLG	RIVERSIDE		
			AVERAGE	RANGE	
Chromium VI ppb -----	NS	NS	2.1	1.5 - 2.5	
Perchlorate ppb -----	AL 4	NS	4.6	<4-11 ppb	
Vanadium ppb -----	AL 50	NS	10.3	6-12 ppb	
Boron ppb -----	AL 1000	NS	ND	ND-120 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 US Environmental Protection Agency (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 that a water system must follow.

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

Maximum Residual Disinfectant Level (MRDL) The level of disinfectant added for water treatment that may not be exceeded at the consumer's tap.

Maximum Residual Disinfectant Level Goal (MRDLG) The level of a disinfectant added for water treatment below which there is no known or expected risk to health. MRDLs are set by the US EPA.

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 (μ MHOS) 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 percent or more of the monthly samples.

(b) EPA promulgated a Radionuclide Rule on December 7, 2000. Effective 2003.

(c) The Lead and Copper Rule requires that 90 percent of samples taken from drinking water taps in program homes must be below the action levels.

MONITORING REPORT

Riverside Public Utilities tests for more than 200 contaminants in our water system. This report provides data from sampling conducted in calendar year 2002. Only those contaminants detected in our water system are listed here. For a listing of additional chemical tests, please contact LuCinda Norried at (909) 351-6331.

WATER RESOURCES - Riverside met 99.2 percent of its water needs from underground resources, receiving only 0.8 percent from Western Municipal Water District. Water quality information for imported water is available on request.

WATER COMPLIANCE AND MONITORING PROGRAM

In 2002, we collected more than 10,000 water samples to test for a variety of potential contaminants. Samples were collected at water sources, along transmission pipelines, throughout the distribution system, including reservoirs and booster stations, and the five regional treatment plants to ensure water quality from its source to your meter.

The Utility uses independent laboratories to perform water tests. This keeps costs down and ensures an independent set of eyes evaluates your water from the source to your meter and tap. Last year, we spent more than \$250,000 on compliance monitoring.

5,899 - Samples collected to test for bacteria.
3,126 - Samples collected for source and system compliance and monitoring.
1,261 - Samples collected for treatment plant compliance and monitoring.

SECONDARY STANDARDS: AESTHETIC STANDARDS

	State MCL	Riverside		Sources of Contamination
		Average	Range	
Color Units	15	<3	<3	Naturally present in environment
Odor Threshold . .	3	1	<1 - 2	Naturally present in environment
Chloride	500 ppm	23 ppm	20 - 25 ppm	Naturally present in environment
Sulfate	500 ppm	64 ppm	51 - 78 ppm	Naturally present in environment
Total Dissolved Solids "TDS" . .	1,000 ppm	325 ppm	280 - 360 ppm	Naturally present in environment
Specific Conductance	1,600 µmho	543	470 - 590	Substances form ions in water
Corrosivity	Noncorrosive	(+.09)	(-0.26) - .51	Natural or industrially influenced balance of hydrogen, carbon, and oxygen in the water; affected by temperature and other factors.
pH Units	NS	7.5	7.2 - 7.9	
Hardness (CaCO ₃)	NS	205 ppm (12 gpg)	170 - 240 ppm	Naturally present in environment
Sodium	NS	35 ppm	28 - 41 ppm	Naturally present in environment
Calcium	NS	66 ppm	56 - 84 ppm	Naturally present in environment
Potassium	NS	3 ppm	1 - 4 ppm	Naturally present in environment
Magnesium	NS	10 ppm	5 - 14 ppm	Naturally present in environment

*NS-no standard

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 that on average is at 21 ppm and has a range from 15 ppm to 26 ppm during the year. The California Department of Health Services (DHS) 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.

PERCHLORATE - Perchlorate salts are used in solid rocket propellants and other industrial applications. In February 2002, California EPA lowered the Provisional Action Limit on perchlorate from 18 ppb to 4 ppb. In response to this regulatory change, Riverside installed two perchlorate treatment plants and lowered the perchlorate levels from 6.4 ppb in 2001 to 4.6 ppb in 2002. In December 2002, California EPA issued a draft Public Health Goal of 2 to 6 ppb.

Riverside is continuing to develop additional treatment options to meet the changing regulations. Final regulations specifying definitive Maximum Contamination Levels (MCLs) are expected in 2004.

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 US 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 California Department of Health Services Radon Information line at 1-800-745-7236.

INFORMATION COLLECTION CONTROL RULE - The group, identified above, 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 INFORMATION:

FLUORIDE - The Department of Health Services has established an "optimal" fluoride level for water at 1 ppm. Riverside has naturally occurring fluoride levels at 0.7 ppm and is not planning to add fluoride to its water by artificial means.

AN IMPORTANT MESSAGE ABOUT DRINKING WATER SOURCES FROM THE US EPA

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 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.

REGULATIONS: In order to ensure that tap water is safe to drink, US EPA and the California Department of Health Services 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 EPA's Safe Drinking Water Hot line. 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 poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hot line at 1-800-426-4791.

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 -

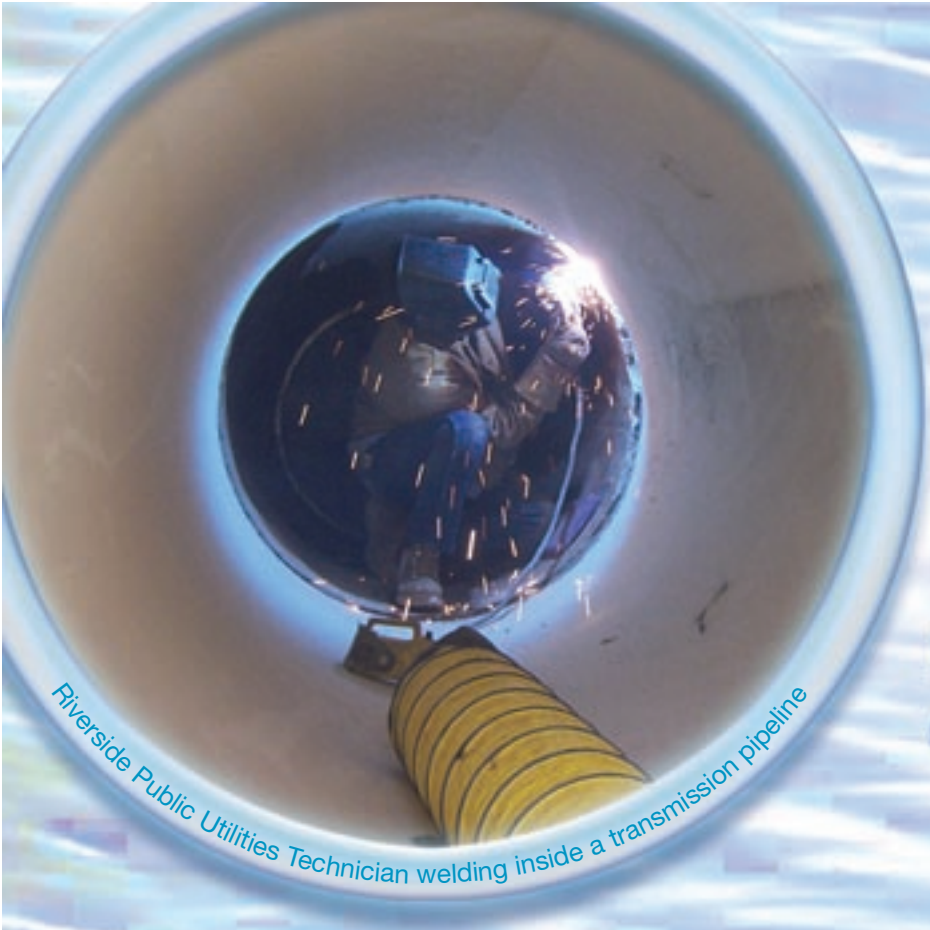
សេចក្តីរាយការនេះមានព័ត៌មានសំខាន់អំពីទឹក
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ជាមួយនរណាម្នាក់ដែលយល់អំពីសេចក្តីនេះ

ຂໍແຈ້ງຂ່າວສារຄົມ ກ່ຽວກັບນ້ຳປະປາທີ່
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ຕິດຕໍ່ສອບຖາມ

이 보고서에는 여러분이 마시는 물에
대한 정보가 들어 있습니다. 이것은 번역
하든지 또는 이것을 이해 하는 사람과 이야기
해 주십시오

このレポートには皆さんが飲む水に
に関する情報が入っています。これを
翻訳するが、又はこ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 quý vị. Hãy dịch ra, hoặc nói chuyện với người nào hiểu
biết về vấn đề này.



Riverside Public Utilities Technician welding inside a transmission pipeline

Riverside Public Utilities is committed to providing you with the highest quality drinking water in the safest way possible.

**www.riversidepublicutilities.com
(909) 782-0330**



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