Annual Water Quality Report

Quality on Tap: 1998

This is an annual report on the quality of drinking water delivered by the Zone 7 Water Agency to its customers. We are proud to report that Zone 7 met or exceeded all federal and state standards for drinking water during calendar year 1998.

You may recall receiving similar reports in the past from Zone 7 or your local water retailer. Zone 7 has been providing an Annual Water Quality Report (AWQR) since 1990 in accordance with state regulatory requirements. The U.S. Environmental Protection Agency (USEPA) Region IX has agreed to allow California to meet the spirit of the federal law by permitting the AWQR to meet existing state regulations and guidelines, with utilities incorporating additional information mandated under new federal “Consumer Confidence Report” requirements into their AWQRs. This report’s purpose is to help consumers make informed decisions regarding their drinking water by outlining where the water comes from, steps taken to monitor and ensure quality, levels of contaminants detected, and the importance of protecting water quality at the source.
Monitoring and maintaining water quality in the Livermore-Amador Valley is a round-the-clock, 365-days-a-year job at Zone 7—and has been since 1962. Using state-of-the-art treatment and monitoring methods, highly qualified and well-trained personnel ensure that the water you and your family use meets or exceeds the most rigorous standards for safety and quality. These standards are set at the federal level by the Safe Drinking Water Act, originally enacted in 1974, amended in 1986, and reauthorized in 1996. Responsibility for enforcing this law rests with the State of California, which has adopted standards at least as, and in many cases, more stringent than the federal regulations. In the final analysis—is your water safe to drink? Absolutely.

We hope you'll find this report's expanded format user-friendly, and that it provides answers to questions you may have about the public drinking water supply. For further information, please contact Zone 7 directly at (925) 484-2600.

Zone 7's primary source of supply is surface water from the State Water Project, which originates north of the Sacramento-San Joaquin Delta in the Feather River watershed. State water is transported into the Valley via the South Bay Aqueduct.

A second source of surface water is the local supply conserved in Lake Del Valle. The area's third major water source is groundwater pumped from the Livermore-Amador Valley Groundwater Basin with its Bernal (west), Amador, and Mochio (east) sub-basins. The groundwater basin stores water against times of drought and helps meet peak summer demands.

Surface water is treated at Zone 7's two water treatment plants, Del Valle and Patterson Pass (for more on the treatment process, see pages 4 and 5). Groundwater is disinfected to ensure its safety.

While much attention is directed toward providing excellent treatment to achieve high-quality drinking water, Zone 7 recognizes the importance of protecting source water from contamination. The Agency has long been involved in issues surrounding the Delta, including the ongoing CALFED process, which affect the quality of the raw water entering the two treatment plants. Protecting the groundwater basin from contamination and increasing salinity is another key emphasis. These issues, coupled with increasingly stringent regulations and the Valley's continued growth, have placed water quality front and center in the arena of public concern.

Source Water Assessment

Zone 7 has extensive groundwater monitoring and management programs to ensure that its local groundwater basin remains a potable and uncontaminated water source. In addition, Zone 7 has participated with other State Water Project contractors in conducting sanitary surveys (1991 and 1996) of its local and imported surface water sources. Another sanitary survey will be completed in 2001, and Zone 7 also will be performing additional source water assessment in accordance with requirements of the California Department of Health Services.
Raw surface water entering Zone 7’s Del Valle and Patterson Pass Water Treatment Plants goes through a number of steps to make it safe to drink. These processes have been approved by the California Department of Health Services and are strictly monitored by Zone 7 staff. Illustrated at left, they include:

**Mixing/coagulation** begins the process of turbidity removal. Turbidity is the fine suspended particulate matter that clouds water. Coagulants such as alum (aluminum sulfate) and special polymers are rapidly mixed with the water, altering the suspended particles' electrical charges and causing them to come together into larger particles, or “floc.”

In the **floculation/sedimentation** step, the floc particles continue to collide, forming ever-heavier, settleable particles. The water moves slowly through a large basin so the floc particles can sink to the bottom for removal. Anywhere from 70-90 percent of suspended matter is removed by sedimentation. At the Del Valle Water Treatment Plant, the floc particles are removed midway through the basin by a special “supersedimentation” process.

The filtration process “polishes” the water, further removing particles and pathogens. The water passes through a dual-media filter made of sand and anthracite coal, which trap the particles. The filters are backwashed, or cleaned frequently to remove accumulated matter. Nearly 100 percent of suspended matter is removed after the filtration process. Protozoan pathogens such as Giardia and Cryptosporidium are also removed during the filtration process.

**Disinfection** is the key to destroying harmful bacteria, parasites, viruses, and other pathogens. Chlorine is used as the primary disinfectant, and chloramines (chlorine/ammonia combination) are added to maintain disinfection after the water leaves the treatment plant and enters the distribution system. Chloramines also help prevent the additional formation of disinfection byproducts.

*Zone 7 is a proud member of the nationwide Partnership for Safe Water, aimed at optimizing water treatment.*
Maximum contaminant level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as the close to the MCLGs and PHGs as it is economically or technologically feasible.

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.

Primary drinking water standard - Primary MCLs, specific treatment techniques adopted in lieu of primary MCLs, and monitoring and reporting requirements for MCLs that are specified in regulations.

Public health goal (PHG) - 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.

Treatment technique - A required process intended to reduce the level of a contaminant in drinking water.

Variation and exemptions - State or EPA permission to not meet an MCL or a treatment requirement under certain conditions. A monitoring exemption was granted for synthetic organic chemicals (SOCs) and cyanide for the 1996-1998 compliance period. These chemicals were not detected in the water during the first monitoring period (1993-1996) and Zone 7’s water source has been deemed to be not vulnerable to these contaminants.
To simplify and streamline the numerous monitoring requirements, the California Department of Health Services initiated a nine-year compliance cycle beginning on January 1, 1993. Each compliance cycle consists of three-year compliance periods. Year 1998 represents the third year of the second compliance period.

Expected Contaminants

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 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 from human activity. Contaminants that may be present in untreated source water 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 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 stormwater 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 stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. Radon is currently not regulated by USEPA. In accordance with the 1996 amendments to the Safe Drinking Water Act, USEPA is planning a radon regulation proposal by August 1999 and promulgation by August 2000. The largest risk to public health from radon is from indoor air. The biggest contributor of radon to indoor air is the soil beneath the house, and to a lesser extent, groundwater and certain types of building materials. Zone 7's 1997 monitoring for radon from its groundwater wellfields showed levels from 120 to 390 pCi/L.

Major Sources for Detected Contaminants

- **Aluminum** Erosion from natural deposits; from alum use as a coagulant.

- **Barium** Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.

- **Beryllium** Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries.

- **Chromium** Discharge from steel and pulp mills; erosion of natural deposits.

- **Fluoride** Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.

- **Mercury (inorganic)** Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cookie.

### PRIMARY STANDARDS

**ORGANIC CHEMICALS**

- **Benzene**
- **Carbon Tetrachloride**
- **1,2-Dichlorobenzene**
- **1,4-Dichlorobenzene**
- **1,1-Dichloroethane**
- **1,1-Dichloroethyllene**
- **1,2-Dichloroethyllene**
- **1,3-Dichloropropene**
- **Ethylene**
- **Monocrotononene**
- **Styrene**
- **1,1,2,2-Tetrachloroethane**
- **Tetrachloroethylene**
- **Toluene**
- **1,3,5-Trimethylbenzene**
- **1,1,1-Trichloroethane**
- **1,1,2-Trichloroethane**
- **1,1-Chloroform**
- **1,2-Chloroform**
- **Dichloroethyllene**
- **Tetrachloroethylene**
- **Trichloroethyllene**
- **Trichloroethylene**
- **Tetrahydrofuran**
- **1,1,1-Trichloro-1,2,2-Trifluoroethane**
- **Vinyl Chloride**
- **Xylene**

**INORGANIC CHEMICALS**

- **Antimony Cyanide**
- **Arsenobetaine**
- **Arsenic**
- **Barium**
- **Beryllium**
- **Cadmium**
- **Copper**
- **Lead**
- **Mercury**
- **Selenium**
- **Silver**
- **Thallium**
- **Tin**
- **Titanium**
- **Trihalomethanes**
- **Volatile Organic Compounds (VOCs)**
- **Synthetic Organic Chemicals (SOCs)**

**RADIOACTIVITY**

- **Concentrated Radium-226 and Radium-228**
- **Gross Alpha particle activity**
- **Tritium, Uranium-234**
- **Uranium-238**

### INFORMATION COLLECTION RULE (ICR) DISINFECTION BYPRODUCTS (DBPs)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>MRL</th>
<th>PATTIERN PASS WATER TREATMENT PLANT</th>
<th>DEL VALLE WATER TREATMENT PLANT</th>
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<tr>
<td><strong>Chloroform</strong></td>
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### ADDITIONAL ICR PARAMETERS

| Total Organic Halides | 5.0 | 110 | 200 | 155 | 115 | 175 | 145 |
| Cycohexene | 0.50 | 46.4 | 7.40 | 6.02 | 3.13 | 4.20 | 3.51 |
| Chloroform | 0.05 | ND | NA | NA | 70 | 134 | 94 |

**MRL** = Minimum Reporting Level  
**ppb** = Parts per billion or micrograms per liter  
**ND** = Not detected at or above MRL, ND in the range column indicate more than one analysis in 1998.  
**NA = Not Applicable**

**Notes:**  
- Zone 7 is being monitored  
- Although a monitoring waiver for SOC was granted by DSU during 2nd compliance period (1996 - 1998), complete monitoring was implemented in 1996.  
- **Data:**  
- **Total:**  
- **Leachability:**

**One part per billion (ppb) is equivalent to a single grain in twice the diameter of the earth.**

**In July, 1997 Zone 7 trained an 8-month data collection effort to comply with CAIR Interim Concentration Rule (ICR). This data will be used for future regulatory. Measurement requirements under the ICR apply only for Zone 7 and to the ICR compliance rules.**

**1990 DBP data from IC monitoring is summarized above.**
In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

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 Environmental Protection Agency’s Safe Drinking Water Hotline (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. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

**FAQs**

**Answers to some frequently asked questions about water quality:**

**Q. What is MTBE...and is it in my drinking water?**

A. MTBE (methyl tertiary butyl ether) was frequently in the headlines in 1998, either in connection with contamination from leaking underground fuel tanks into drinking water. MTBE is a colorless and flammable chemical (oxygenate) which is added to gasoline to reduce air pollution. Unfortunately, it is also a water pollutant that has been classified as a "probable human carcinogen."

In February 1997, the state of California added MTBE to the list of chemicals that must be routinely monitored by water agencies. MTBE has not turned up in our own water supplies but it remains a real concern prompting the Zone 7 Board of Directors to adopt a resolution recommending its replacement and to support SB 321, which called for an independent scientific assessment of the additive.

Zone 7’s philosophy is to act before contamination occurs, not after. Our groundwater basin is replaceable, and contamination by MTBE from spills or underground storage tanks represents a potential threat to a major source of the Valley’s water supply.

**Q. Is Cryptosporidium a problem here?**

A. Zone 7 monitors for Cryptosporidium but none has ever been detected in local water supplies. This microscopic parasite is not life-threatening to healthy adults but can be dangerous to people with compromised immune systems, such as those with AIDS or who are undergoing chemotherapy. It infects the intestinal tract and causes diarrhea.

Because Cryptosporidium may enter raw water supplies from the feces of wildlife and cattle, you should never drink directly from streams, rivers, or lakes, even if the water is swift running or appears clean. Another way to help prevent its spread is to wash your hands thoroughly with soap after gardening, changing diapers, handling or petting farm animals, using the toilet, or after any potential contact with human or animal feces.

**Q. Do I need a water softener?**

A. It’s strictly a matter of personal preference. Water softeners use an ion exchange resin and salt to remove ‘hardness’ minerals (calcium and magnesium) from water. Highly mineralized water results in soap scum deposits in basins and tubs as well as spotty dishes and dult-looking laundry.

Water softeners do not otherwise “treat” water or make it any safer, despite some sales pitches. And because these devices work by exchanging sodium ions for the hardness ions, the resulting water supply is higher in sodium.

Your tap water is primarily a blend of imported and local surface water, with groundwater taking up the slack in dry times and at the peak of summertime demand. It typically averages less than 300 ppm TDS (total dissolved solids, or dissolved minerals). Compared to other major sources of supply, such as the Colorado River (averaging 700 ppm TDS), the Valley’s treated surface water is generally “soft” and low in dissolved minerals.

For a free copy of a Consumer Reports reprint on water softeners and other treatment devices, contact Zone 7.

**Q. Should my family be drinking bottled water?**

A. Only if you prefer the taste—and don’t mind the price. Tap water is required by law to meet numerous, rigorous standards, and water suppliers must test at frequent regular intervals for a multitude of contaminants (see tables on pages 6-9). Bottled water may taste different—some might think “better”—but it’s no safer than tap water. In some cases, it’s nothing more than bottled tap water that has undergone additional treatment to remove some of the harmless and often beneficial minerals, such as calcium.

(Above) Clarifiers at the 12-million-gallon-per-day Patterson Pass Water Treatment Plant. (Below) The 30-million-gallon Patterson Reservoir provides storage and helps equalize influent water quality to the Patterson Pass Water Treatment Plant.
Throughout its history, Zone 7 has consistently met or exceeded all water quality standards. But as new technologies produce ever-more-sensitive monitoring systems, the bar is continually raised to make treatment and detection methods even better—a never-ending process of optimization.

At the same time, the Agency must keep an eye on the bottom line to ensure the cost-effectiveness of each improvement.

Partnering with other agencies is one way to optimize resources and share valuable knowledge. In 1998, Zone 7 continued its involvement in the Partnership for Safe Water, developed jointly by the U.S. Environmental Protection Agency, the American Water Works Association Research Foundation, the Association of State Drinking Water Administrators, several utilities, and other water organizations. Some 300 utilities nationwide participate in the Partnership. The intent of this phased, voluntary self-assessment and peer-review program is to ensure high-quality drinking water by examining agencies’ operations, maintenance, and management practices and determining ways they might be improved.

In addition to its involvement in the CALFED Bay-Delta process, the Agency and 15 other urban State Water Project contractors fund the Municipal Water Quality Investigations (MWQI) program to provide water quality information to help ensure the best available source water is pumped from the Delta.

In July 1997, Zone 7 began participation in the 18-month USEPA Information Collection Rule (ICR) monitoring program. Together with 300 other leading utilities nationwide, the Agency monitors surface sources for USEPA, which will use the information to evaluate and modify current regulations and establish new ones. The water quality laboratory, located at the Del Valle Water Treatment Plant, was approved by USEPA to perform the ICR testing and was further distinguished by being only one of 70 in the nation selected for a special ICR study that began in 1998.

You Can Play a Role
Zone 7 has always encouraged public participation in decisions that may affect the quality of your drinking water. Regular meetings of the Board of Directors are open to the public and are held the third Wednesday of each month at 7 p.m. in the Board Room. Special meetings, also open to the public, are held as needed. Meeting agendas are posted online at Zone 7's Web site (address below) or are available by contacting Zone 7 at the phone number listed below.

Zone 7 WATER AGENCY
5937 Parkside Drive
Pleasanton, CA 94568-5522
Phone: (925) 884-2600
Fax: (925) 887-3711
E-mail: zone7@zone7water.com
Visit Zone 7 online at www.zone7water.com
(includes links to related Web sites)
EPA SAFE DRINKING WATER HOTLINE
(800) 426-4791

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