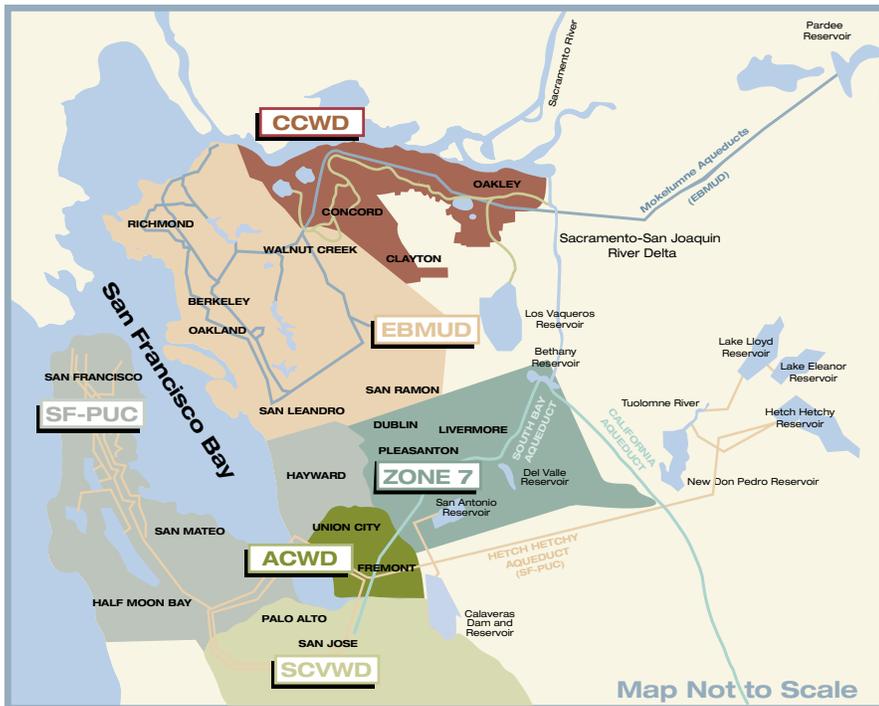


# WATER WAYS

Alameda County Flood Control and Water Conservation District • Zone 7

## SOURCES OF WATER IN THE BAY AREA



This graphic shows how major water districts receive their water.

the California Aqueduct, is no longer the same quality as water imported by San Francisco and EBMUD in their dedicated aqueduct systems due to a variety of environmental factors impacting the Delta.

Before delivery to customers the water from the Delta passes through local water treatment plants to assure that it meets all the primary health standards of the U.S.

Environmental

Protection Agency and California Department of Health Services.

However, at certain times of the year accelerated algae growth in

the import facilities can result in the water having an earthy, musty taste and smell. These periodic, short-term occurrences are not a health concern. The water is safe, but it is an aesthetic problem all the water agencies try to address when treating the water before delivery to customers.

*Harder water requires more soap, can leave spots on cars and dishes, and increases mineral buildup in plumbing fixtures.*

The California State Department of Water Resources is implementing a number of projects and programs in the Delta to improve the quality of its water.

On the average, 75% of Zone 7's water comes from the Delta. The rest comes from groundwater supplies. Local groundwater is typically

higher in minerals and hardness than imported surface water, but is not subject to the algae episodes that cause the taste and odor changes. Hardness is generally caused by calcium and magnesium in the water. Harder water requires more soap, can leave spots on cars and dishes, and increases mineral buildup in plumbing fixtures. A common water issue, a United States Geological Survey study determined that hard water is found in more than 85% of the country. That's because groundwater makes up most of the water supply in the U.S.

Today the Bay Area receives its water supply from many different sources. That's why the water often tastes differently and is otherwise distinguishable from one community or part of the Bay Area to another.

San Francisco and other communities on the Peninsula receive most of their water directly from the Hetch Hetchy Watershed in the Sierras via aqueducts. This water is so pure it requires only filtration and disinfection before being delivered to customers.

East Bay Municipal Utility District (EBMUD), serving Oakland and other cities in the East Bay, imports almost all of its water via aqueducts from the Sierras as well, in this case the Mokelumne River Watershed. Like San Francisco's, this water is of very high quality.

Other communities in the Bay Area, including several in the North Bay, receive water from the Sierras via rivers that run to the Bay.

The South Bay, the lower portion of the East Bay, and the Livermore-Amador Valley also receive most of their water from the Sierras. However, in this case the water passes through the Sacramento-San Joaquin Delta before being pumped into the South Bay Aqueduct that runs from north of Tracy all the way to San Jose. This water, the same as Southern California gets through

### SPECIAL WATER QUALITY ISSUE!

- WATER IN OUR VALLEY
- WORKING FOR A RELIABLE SUPPLY OF HIGH QUALITY WATER
- HOW ARE WATER PROJECTS FUNDED?
- WHAT PEOPLE ARE SAYING ABOUT HARD WATER

# WATER IN OUR VALLEY

Before Zone 7 began importing surface water in the early 1960s all the drinking water in the Tri-Valley came from wells. The groundwater basin was recharged naturally by falling rain and water in streams that percolated into the ground.

Today about 75% of the water used in the Zone 7 service area comes from the Sacramento-San Joaquin River Delta via the South Bay Aqueduct. The rest still comes from our own groundwater basin. Zone 7 carefully manages the groundwater basin with pumping quotas and supplements the natural recharge with an artificial recharge program that percolates a portion of the imported water supply into the ground for future use. This water "banking" program was developed to make sure this valuable water resource is always available to routinely supplement imported supplies in the high-demand summer season and as a backup in the event of drought or when imported supplies may not otherwise be available. The result is that customers in the Valley typically drink water that is a blend of imported surface water and groundwater.

Because the facilities that treat the Delta water are located in the eastern part of the Valley, residents there often get a higher percentage of Delta water and a lower

magnesium in the water. It requires the use of more soap, can leave spots on cars and dishes, and increases the rate of mineral build-up in plumbing.

Hardness is not a health concern, but it does pose aesthetic and eco-

*Hardness is not a health concern, but it does pose aesthetic and economic concerns.*



*Today about 75% of the water used in the Zone 7 service area comes from the Delta. The rest comes from our own groundwater basin.*

proportion of groundwater than do those in the western portion of the Valley where most of the wells are located. The result of this is that water on the western side is generally harder than that provided on the eastern side of the service area. Some residents of Livermore may also notice harder water from the wells operated in that area by the California Water Service Company. Groundwater is harder than Delta surface water. Hardness is caused by calcium and

economic concerns. Zone 7 is working to address these concerns and has developed project plans to reduce the hardness of delivered water from its system.

The primary causes of the occasional occurrences of noticeable taste and smell in the water are (1) chemicals added in the water for health protection, (2) seasonal algal bloom in the surface water (earthy and musty taste and smell), (3) seasonal seawater intrusion in the surface water in the Delta (salty taste), and (4) changes in the blend of surface and groundwater supplies.

Please read elsewhere in this newsletter about what Zone 7 is doing to improve the taste, smell and hardness of your water.

## CONTACT INFORMATION

California Water Service Company (Livermore), 447-4900  
[www.calwater.com/WaterQuality/wq.asp?Rel=T&Path=%2E%2FReports%2F2002](http://www.calwater.com/WaterQuality/wq.asp?Rel=T&Path=%2E%2FReports%2F2002)

Dublin San Ramon Services District, 875-2360  
[www.dsrsd.com/what\\_we\\_do\\_services\\_offered/waterservicesfaq.html](http://www.dsrsd.com/what_we_do_services_offered/waterservicesfaq.html)

City of Livermore Water Resources Division, 960-8160  
[www.ci.livermore.ca.us/wrd/faqs.html#quality](http://www.ci.livermore.ca.us/wrd/faqs.html#quality)

City of Pleasanton Water Division, 931-5510  
[www.ci.pleasanton.ca.us/publicworks/watersystem.html](http://www.ci.pleasanton.ca.us/publicworks/watersystem.html)

California Department of Health Services  
[www.dhs.ca.gov](http://www.dhs.ca.gov)

California Department of Water Resources  
[www.water.ca.gov/nav.cfm?topic=State\\_Water\\_Project&subtopic=Water\\_Quality](http://www.water.ca.gov/nav.cfm?topic=State_Water_Project&subtopic=Water_Quality)

# WORKING FOR A RELIABLE SUPPLY OF HIGH QUALITY WATER

## WATER TASTE, SMELL AND HARDNESS

Since the early 1990s Zone 7 has been working to reduce hardness and minimize taste and odor incidents in the water delivered to its customers. Hardness generally comes from the groundwater that makes up about 25% of the Valley's total water supply. The taste and smell generally come from the surface water imported from the Delta.

### Hardness

Hardness in groundwater water is generally caused by concentrations of calcium and magnesium in the soil that dissolve in the water. For the same reason, groundwater also is generally higher in total dissolved solids (TDS). These can include carbonate, bicarbonate, chloride, sulfate, phosphate, nitrate, calcium, magnesium, sodium, organic ions, and other ions. When efforts are made to reduce the TDS, hardness also is reduced because calcium and magnesium are among the ions that constitute TDS.

### Taste and Smell

Very hot weather increases the algae bloom in the surface water we

receive from the Delta. This results in water several times a year that has a more noticeable earthy and musty taste and smell. These seasonal variations also affect the water taste and smell in other areas, as was the case several months ago throughout the state. Many other parts of the Bay Area, however, do not encounter

this problem because their water comes directly from the snowmelt in the Sierras via dedicated reservoirs and aqueducts that bypass the Delta.

Zone 7 will spend \$6 million on improvements at the Del Valle and



Del Valle Water Treatment Plant

Patterson Pass Water Treatment Plants specifically designed to remove more of the earthy and musty taste and smell. New treatment facilities in the Altamont Pass area will incorporate the same improvement upgrades. Required environmental studies for the new facilities should be completed in a year, allowing for the construction of the new facilities to begin within the next two years and completion by 2009.

## WORKING TO IMPROVE WATER QUALITY Groundwater

In the early 1990s Zone 7 began looking to reduce the increasing TDS and hardness in the groundwater as a result of urbanization. Landscape irrigation that percolates into the ground takes with it chemicals from fertilizers and along the way leaches out some of the minerals already in the soil.

Zone 7's Salt Management Plan (SMP), completed in 1993, addressed the salt loading to the Main Groundwater Basin.

One of its recommendations is to increase the practice of "conjunctive use," or pumping more higher-TDS groundwater for use in the water distribution system so it can be

replaced through artificial recharge with lower-TDS surface water. While this program may result in a temporary increase in TDS and hardness in delivered water, it is necessary to stabilize the salt loading in the basin so that it remains a viable long-term supply of water for the Valley.

Another plan was to use the groundwater basin to store even more water by injecting lower-TDS, treated drinking water during the winter and then pumping essentially the same water back out in the summer when demand increases. This project, named aquifer storage and recovery (ASR), would have helped to reduce the amount of salts and hardness in the delivered water. Unexpected reactions between the injected water and subsurface groundwater resulted in well clogging and significantly reduced recovery rates making the ASR project uneconomical.

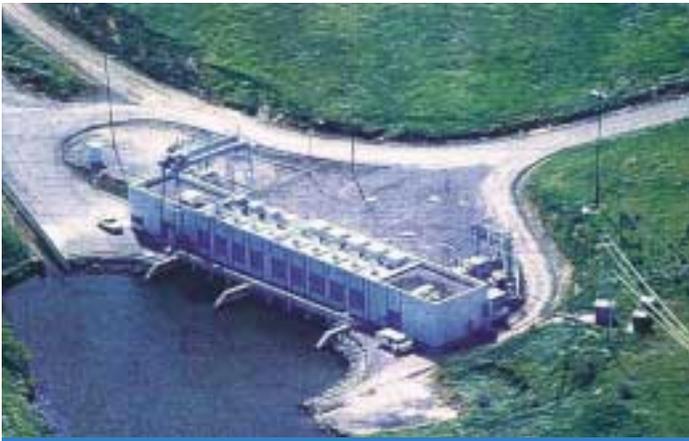
Work on another alternative called wellhead demineralization began almost immediately. This process treats pumped groundwater by reverse osmosis (R.O.) to remove significant amounts of TDS and hardness. Although the primary purpose is to help stabilize the salt loading of the basin, the project has the added benefit of producing softer water for residents on the western side of the Valley. Design of the first treatment facili-



This building houses one of Zone 7's wells.

ties was started this year. The current schedule calls for the first phase to be online in early 2007. Project costs will be shared equally between existing customers and new development because both contribute to the salt loading. If necessary, additional facilities will be built in the future to achieve the Zone's salt management and water quality goals.

Management of groundwater is also essential to water supply reliability in the Valley. To keep up with increasing demand, and to continue to meet reliability standards, Zone 7 is developing a Well Master Plan. The plan includes constructing new wells that will maintain an acceptable ratio of groundwater to surface water under normal conditions as well as provide the ability to use more groundwater when surface water from the Delta is not available. Environmental review of the plan is underway now. It includes an assessment of the plan's immediate and long-term impacts to groundwater quality.



South Bay Aqueduct intake in the delta

## Surface Water

Surface water supplies generally have a lower level of TDS and hardness than groundwater. Because Zone 7's water supply is a blend of both surface water and groundwater, projects that increase the percentage of surface water will also help reduce the level of hardness throughout the Valley.

One of these efforts is the South Bay Aqueduct Improvement and Expansion Project slated for completion in 2008. The "improvement" portion of the project is to increase the flows in the aqueduct up to their origi-

nal design capacity. The State and water customers of agencies that use the aqueduct (including Zone 7) are paying for these improvements. The "expansion" portion of the project is to accommodate general-plan growth in the cities of Dublin, Livermore and Pleasanton. Connection fees on all new development will pay the cost of this portion of the total project.

The proposed Altamont Water Treatment Plant, with treatment capacity of 24 million gallons per day (mgd) in its first phase, is due to come on line in 2009 following the completion of the South Bay Aqueduct Improvement and Expansion Project. This plant will include new technologies necessary to treat taste and odor. A new pipeline that will deliver the additional supplies of treated surface water from the plant to the urban areas of the Valley is included in the project.

Last year Zone 7 completed a state-of-the-art ultrafiltration expansion project at the Patterson Pass Water Treatment Plant to further increase the use of surface water by 8 mgd. A similar expansion project at the Del Valle Water Treatment Plant, slated for completion in late 2005, will provide an additional 10 mgd of capacity. Both plant upgrades allow for a more reliable and expanded supply of lower-TDS water to Valley customers.

## Water Reliability

It is difficult to discuss water resource planning without considering another significant issue – reliability.

You may have read recently where residents of several communities, even some in the Bay Area, have been asked to cut back on their water usage and even prepare for possible rationing. The continued drought in the western states has reduced flows in the Colorado River and put more demand on resources within the state.

While it is always a good practice to conserve water, rationing in the Valley is very unlikely. This is because, with the concurrence of other Valley agencies, Zone 7's long-term planning is based on the policy of having 100% reliability in the water system. This is during droughts or at other times when imported supplies are not available or adequate to supply our com-

*... rationing in the Valley is very unlikely. This is because, with the concurrence of other Valley agencies, Zone 7's long-term planning is based on the policy of having 100% reliability in the water system.*

munities, such as during the recent levee break in the Delta. In addition to supplementing local storage with out-of-area storage, the principal way reliability is obtained is by increasing the volume of water stored in the groundwater basin and by building a sufficient number of wells to pump the water when needed as an alternate supply.

This table lists the efforts discussed above by Zone 7 to improve delivered water quality.

Project Name	Start	Completion
South Bay Aqueduct Improvements and Expansion	1999	2008
New Altamont Water Treatment and Pipeline	1999	2008
Del Valle Water Treatment Plant Upgrades	2000	2005
Phase I of Wellhead Demineralization	2003	2007
Phase II of Wellhead Demineralization	2003	2007
Phase III of Wellhead Demineralization	*	*

\*If necessary

# HOW ARE WATER PROJECTS FUNDED?

*Zone 7 remains committed to developing and managing water resources in a fiscally responsible, innovative, proactive, and environmentally sensitive way.*

Because people pay for the water they receive, a quick response would be to say the cost to obtain, treat and delivery water is paid for by water rates. But, as you might expect, it is a little more complicated than that. Here's basically how water projects and expenses are funded:

**Projects to accommodate new growth.** Developers, when they pay the water connection fee for new homes or businesses, fund these projects. Examples include those needed to purchase new water supplies, expand imported water conveyance systems and water treatment plant capacity, and to build additional distribution pipelines.

**Projects and expenses that benefit existing customers.** Existing customers, through their water bills, pay for these projects. Examples are replacement and repair of aging treatment plants, wells and distribution systems; additional treatment facilities or equipment required by new EPA or Health Department regulations; and the actual costs of water, labor, supplies and services.

## TIMING

Another issue closely related to funding is timing. Just like with personal finances, there is a choice. We can save the money and pay cash for what we want. The total cost is usually less. But we have to delay our purchase, or project, until we accumulate enough money to pay for it. The other alternative is to borrow the money so there is no waiting. But the purchase, or project, ends up costing more because of the interest that must be paid on the loan as well.

Zone 7's policy has been to not borrow money to fund a project unless it is critical to health and safety or water reliability and cannot be funded from existing financial resources.

Some suggest that Zone 7 should borrow funds to accelerate projects, in addition to those already planned and discussed elsewhere in this newsletter, to reduce the hardness of water. Others, however, say that Zone 7 should stick to its "pay-as-you-go" policy of financing such projects.

Zone 7 remains committed to developing and managing water resources in a fiscally responsible, innovative, proactive, and environmentally sensitive way. Please don't hesitate to visit our website at [www.zone7water.com](http://www.zone7water.com) or call Zone 7 if you have any questions.

# WHAT PEOPLE ARE SAYING ABOUT HARD WATER

SOME SAY ...	WHILE OTHERS ARE SAYING ...
The water in the Valley is no harder than the water where I used to live.	The water in the Valley is harder than where I used to live.
Valley residents should wait to see what already budgeted projects will do to reduce the hardness in water before planning further improvements and raising rates to pay for them	We know we will need the further improvements to reduce the hardness in the water. Zone 7 should plan for these projects now even if it means raising water rates.
If I had to choose one or the other, I would prefer a high level of water reliability all the time, even during droughts, instead of reducing the hardness of water.	Reducing the hardness of the water is more important than having 100% water reliability at all times. After all, not all communities in the Bay Area have such water reliability.
Zone 7 should stick to its policy of "pay-as-you-go" financing and not borrow money to speed up projects to reduce the hardness in water. The interest costs would be passed on to residents with increased water rates.	Reducing the hardness of the water is so necessary that it is worth having to pay the interest of borrowed money in increased rates so that projects can be constructed as soon as possible.
I already have a water softener that reduces the hardness of my water in the home. I don't want my rates to go up any more.	I am willing to pay higher rates to have Zone 7 and my water retailer reduce the hardness of the water.

# Zone 7 Kids' Page

Did you know that during the hot summer months we use more of our groundwater supply in order to meet everyone's need for water? In addition to drinking water, baths and showers, car washes, and other things we do all year, because there isn't much rainfall during summer months we have to rely on groundwater to water golf courses and even our own yards. Our groundwater supply is replenished in part by rainfall during the winter months. If you just can't wait for rain, try making your own rainstick. Follow the easy directions below and you can hear the sound of rain any time of year.

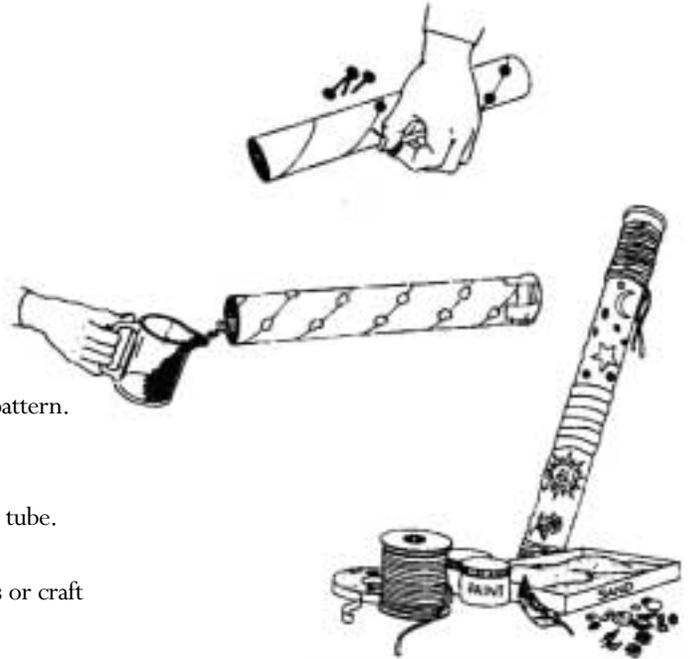
## MAKE YOUR OWN RAINSTICK

### What you'll need:

- Cardboard tube from paper towels, gift-wrapping or mailing tube
- Flat head nails (1-inch diameter tube, 7/8 inch nail)
- Masking tape
- Scissors
- "Filling," seeds, pebbles, rice, dried beans, shells, beads, etc.
- Decorations: paper, paint, stickers, leaves, sticks, crayons, glitter, etc.

### Directions:

1. Insert nails that are slightly shorter than the diameter of the tube in a spiral pattern.  
A small hammer may be useful.
2. Wrap the entire tube in masking tape to secure nail heads.
3. Seal one end of the tube with masking tape. Pour in enough filling to fill the tube.  
Cover the other end of the tube with masking tape.
4. Decorate your rain stick by using things from nature such as leaves and sticks or craft items like stickers and crayons. Use your imagination and have fun!



Printed on recycled paper with soy-based inks.



**(925) 484-2600**  
**www.zone7water.com**

WATERWAYS is published three times yearly by the Zone 7 Water Agency.

Regular meetings of the Board of Directors are held the third Wednesday of each month at 7 p.m. in the Board Room. Special meetings are held as needed. Meetings are open to the public.

*General Manager*  
Dale Myers

Richard L. Quigley  
William R. Stevens  
John P. Marchand  
James B. Kohlen  
James Concannon  
John J. Greci, Jr., *Vice President*  
Stephen A. Kalhoff, *President*

### BOARD OF DIRECTORS



ZONE 7 WATER AGENCY  
5997 Parkside Drive  
Pleasanton, CA 94588-5217

**TIME VALUE**

## POSTAL CUSTOMER

