

## Zone 7 Water Agency

By Don Strickland

Construction of the State Water Project (SWP) began in 1957 and its major initial facilities were completed in 1973. Yet, south-of-Delta SWP water deliveries started in 1962, six years before Oroville Dam was even completed.

This issue's SWP Contractor Profile looks at one of the two agencies which received that water, Alameda County Flood Control and Water Conservation District, Zone 7.

Zone 7 Water Agency, as it's known for short, is one of 10 active "zones" or geographical areas comprising the Alameda County Flood Control and Water Conservation District (ACFCWCD).

The California Legislature created ACFCWCD in 1949 to provide flood control and water resources for much of Alameda County.

In 1957, Livermore-Amador Valley residents voted to form Zone 7 Water Agency and it became the only zone in the flood control district to have its own elected seven-member board of directors and – in addition to providing flood protection – also serve as a water supplier and groundwater manager.

As a "water wholesaler," Zone 7 sells treated water primarily to four retail water agencies: the cities of Livermore and Pleasanton; the California Water Service Company (serving part

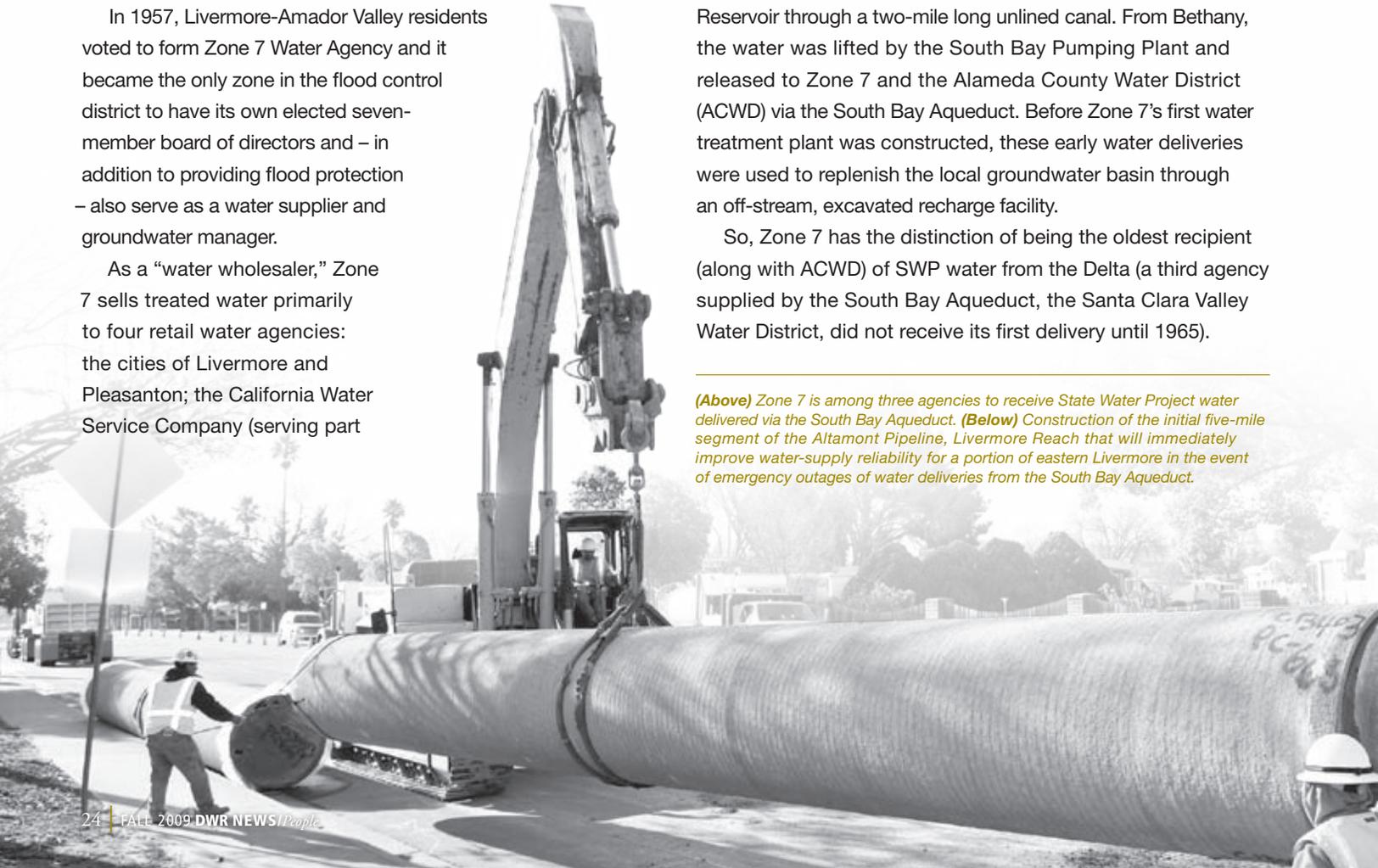
of Livermore); and the Dublin San Ramon Services District. It also provides untreated water directly to agricultural operations, golf courses, and some other customers. Furthermore, it is the groundwater management entity for the Livermore-Amador Valley groundwater basin.

In June of 1962, the first south-of-Delta SWP delivery was made to Zone 7 and the Alameda County Water District (serving Fremont, Newark and Union City) through a portion of the South Bay Aqueduct. Because Oroville Dam was still under construction, DWR accomplished that delivery by purchasing water from the U.S. Bureau of Reclamation (as it did until late in 1967).

Prior to completion of the Banks Pumping Plant, an interim pump station took water from the Bureau's Delta-Mendota Canal and moved it to Bethany

Reservoir through a two-mile long unlined canal. From Bethany, the water was lifted by the South Bay Pumping Plant and released to Zone 7 and the Alameda County Water District (ACWD) via the South Bay Aqueduct. Before Zone 7's first water treatment plant was constructed, these early water deliveries were used to replenish the local groundwater basin through an off-stream, excavated recharge facility.

So, Zone 7 has the distinction of being the oldest recipient (along with ACWD) of SWP water from the Delta (a third agency supplied by the South Bay Aqueduct, the Santa Clara Valley Water District, did not receive its first delivery until 1965).



*(Above) Zone 7 is among three agencies to receive State Water Project water delivered via the South Bay Aqueduct. (Below) Construction of the initial five-mile segment of the Altamont Pipeline, Livermore Reach that will immediately improve water-supply reliability for a portion of eastern Livermore in the event of emergency outages of water deliveries from the South Bay Aqueduct.*



Zone 7 Water Agency General Manager Jill Duerig is a past general manager/chief engineer for the Scotts Valley Water District and has worked for the Alameda County Water District in various capacities, including as production manager and division engineer in groundwater resources.

She is also a member of the California Bar who has worked as an attorney in a private law firm where she specialized in construction, environmental and water law – almost exclusively for public agency clients.

Duerig has a Public Interest Law Certificate from Santa Clara (CA) University School of Law, a Master of Science degree in Civil (Sanitary) Engineering from the University of Pittsburgh (PA), and a Bachelor of Science degree in Fundamental Science (Chemistry/Biology) from Lehigh University (PA).

In 1962, deliveries to Zone 7 totaled only 494 acre-feet. Today, Zone 7 has a maximum SWP “Table A” entitlement of 80,619 acre-feet per year and supplies treated drinking water to retailers serving nearly 200,000 people in Pleasanton, Livermore, Dublin and (through special agreement with the Dublin San Ramon Services District) the Dougherty Valley area in Contra Costa County.

Zone 7 also supplies agricultural water to farms and vineyards, including Livermore’s well-known Wente and Concannon wineries, and provides flood protection to all of eastern Alameda County. The Zone also adopted a Groundwater Management Plan in 2005 and continues to actively manage the basin, producing annual status reports on the groundwater management program.

The three South Bay Aqueduct (SBA) contractors are currently funding DWR improvements to the SBA. Additionally, Zone 7 is paying for an aqueduct enlargement so it can draw its entire 80,619 acre-foot entitlement when it is available.

DWR’s project includes a new 425 acre-foot reservoir that will provide some storage for off-peak pumping, thereby reducing energy costs for all SWP contractors.

To make untreated water from the SWP (and rainfall runoff collected in Del Valle Reservoir) suitable for drinking, Zone 7 uses its Del Valle and Patterson Pass treatment plants.

The Del Valle plant, located in southern Livermore, has a capacity of 40 million gallons per day (MGD) and also houses the agency’s water quality laboratory and maintenance facilities.

Eastern Livermore is home to the Patterson Pass plant, capable of treating 12 MGD. The accompanying Patterson Pass Ultrafiltration Plant can treat another eight MGD.

To accommodate anticipated growth in its service area, Zone 7 has been planning another treatment

facility in the Altamont Hills, east of Livermore. Because of the current state and national economic slowdown, construction is not expected to begin until at least 2014. In the meantime, Zone 7 has commissioned a peer review study to confirm that the location and process selection decisions made for the plant are ideal.

At an estimated cost of \$138.8 million, the current design for the Altamont plant’s first phase plans has a capacity of 24 MGD, expandable in Phase II to 42 MGD.

The Altamont project will include a \$62.8 million 11-mile long pipeline from the plant to Livermore’s Kitty Hawk Road. This past summer, the agency completed construction of an initial 5.6-mile pipeline segment that will, independently of the larger project, have its own immediate benefit by improving water supply reliability for a portion of eastern Livermore.

Typically, 80 percent of Zone 7’s water supply originates as Sierra snowmelt and is conveyed by the SWP through the ecologically fragile Delta to the South Bay Aqueduct.

But, court-ordered Delta pumping restrictions aimed at protecting endangered fish species, coupled with three consecutive drought years, reduced 2009’s SWP deliveries to 40 percent of contractor requests. These factors, along with other issues (such as fragile levees and the threat of seismic activity) cast considerable doubt on long-term Delta water supply reliability for Zone 7 and other SWP contractors.

Zone 7’s General Manager since February 2007 (and one of the few women to head an SWP water agency) is **Jill Duerig**. She joined Zone 7 in 2005 and was quickly promoted to assistant general manager of engineering before moving up to the top job.

DWR NEWS/People contacted Duerig for her thoughts on the Delta and other issues affecting her agency.



*“Groundwater is a critical component of our integrated regional water management. During wet years, we bank excess supplies in the groundwater basin so that we have reserves for use during dry years.”*

*(Left) In 2009, Zone 7 is constructing two new municipal wells to enhance ability to deal with unplanned outages. The wells are located in a groundwater recharge area located between Livermore and Pleasanton. (Below) Lake Del Valle southeast of Livermore is used by the SWP to store some Delta-conveyed water for Zone 7, the Alameda County Water District and the Santa Clara Valley Water District. Zone 7 also receives rain runoff from the local watershed stored in Del Valle.*

**Since you get 80 percent of your water from the Sacramento-San Joaquin Delta through the State Water Project, would you say the Delta water reliability crisis is currently your biggest concern...?**

Reliability of the SWP and the Delta crisis are definitely major concerns for Zone 7, which is why we are active supporters of both the Bay-Delta Conservation Plan (BDCP) effort and the Delta Habitat Conservation and Conveyance Program (DHCCP), sitting on the steering committee of the former and representing SWP on the executive committee of the latter. We are enthusiastic supporters of the coequal objectives of water supply reliability and ecosystem recovery. However, the Delta crisis certainly isn't the only concern right now for Zone 7. Another major concern has to do with the current financial crisis (best seen by the slowdown in local development) which is aggravated by our emphasis on conservation (which results in reduced revenues).

**Considering the ongoing uncertainty about moving water through the Delta to SWP contractors, what are you doing to ensure that you'll have enough water to meet your demand...?**

We have been supporting interim actions in the Delta to protect fish, such as the Two-Gate Project and further evaluation of fish screen alternatives. In addition, we have conducted water supply studies to look at whether there are opportunities for local supplies.

(The Two-Gates Fish Protection Demonstration Project, proposed by the U.S. Bureau of Reclamation, would install and operate removable gate structures at two key locations in the Delta to test whether they can improve protection for Delta smelt and other sensitive aquatic species.)

**How does groundwater figure into your supply portfolio...?**

Groundwater is a critical component of our integrated regional water management. During wet years, we bank excess supplies in both the local groundwater basin and in banks operated by Semitropic and Cawelo so that we have reserves for use during dry years. This conjunctive use of our State Water Project supply also buffers seasonal fluctuations in demands and preserves the supply in large storage reservoirs that are not subject to evaporative losses. Furthermore, recharging our basin with imported water improves the quality of groundwater by better balancing mineral concentrations.

## **You have a very ambitious water conservation program. How important is conservation to Zone 7 in this time of limited supply and court-imposed Delta pumping restrictions...?**

Conservation is less important to Zone 7 in the short term than many other agencies due to the large reserves of water stored both in our local groundwater basin and in out-of-basin storage (Semi Tropic and Cawelo). However, conservation is critical to Zone 7 in the long term. In April 2009, the Zone 7 board adopted a resolution supporting ACWA's Policy Principles on Water Conservation and Water Use Efficiency (See first bullet on webpage, <http://www.acwa.com/issues/PolicyPrinciples>). These policies include the 20 x 2020 Goal ("ACWA supports the Governor's statewide goal to reduce per capita water use 20 percent by 2020, which translates into a statewide aggregate of 1.74 million acre-feet of additional conserved...") and the Local Water Resource Development Goal ("Increasing water reuse (recycling), cleaning-up polluted or otherwise unusable groundwater and desalination and development of storm water recharge..."), among many others. Zone 7 has used these principles, along with a cost-benefit analysis of best management procedures/demand management measures conducted by Kennedy-Jenks, to expand its conservation program and pilot some additional measures not previously implemented. As a member of California Urban Conservation Council, Zone 7 is committed to ongoing water conservation efforts.

## **How does Solar Power figure into your efforts...?**

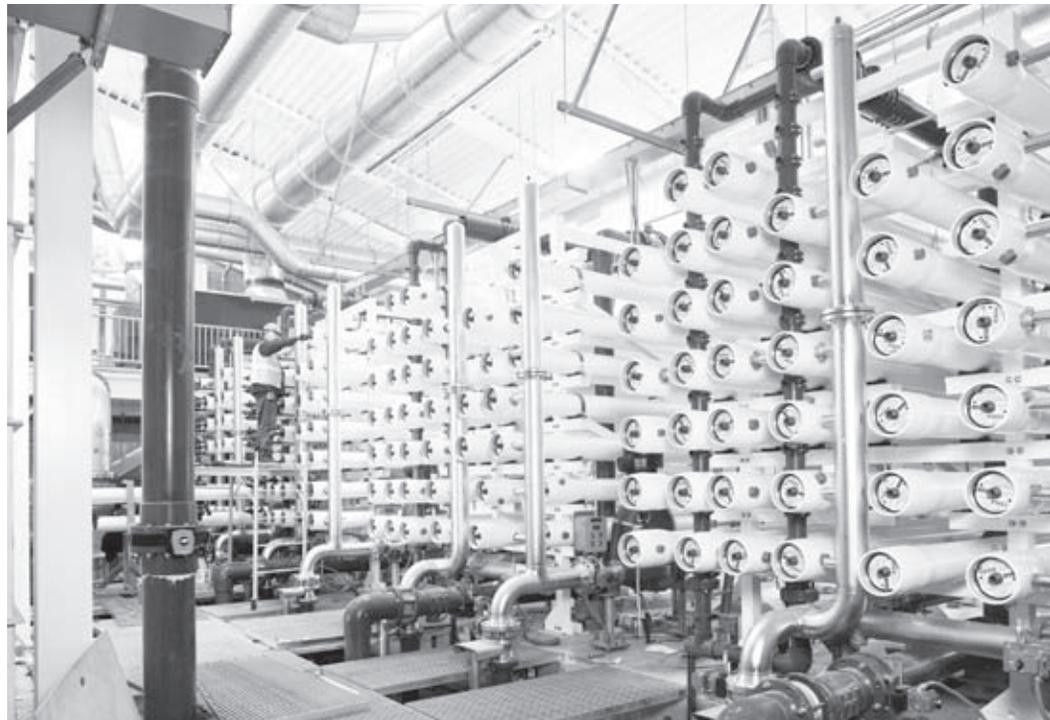
Zone 7 is short on capital for major improvement projects at this time. However, after reviewing alternative energy opportunities available for various Zone 7 facilities, we have entered into a "Power Purchase Agreement" for the installation of photovoltaic cells at our Del Valle Water Treatment Plant which will provide almost half of the power demand for this facility. Installation is behind schedule but is progressing. In addition to the solar power project, Zone 7 is also attempting to reduce its carbon footprint by participating in the California Climate Action Registry, applying for membership in both WAPA (Western Area

Power Administration) and PWRPA (Power and Water Resources Pooling Authority), participating in PG&E's demand reduction program, and considering greener options when replacing outdated fleet vehicles.

## **SWP water is delivered untreated. How do you approach the task of turning it into a quality product for your customers...?**

As delivered, the SWP water satisfies the needs of our agricultural customers. These untreated water customers are primarily using the water to irrigate vineyards, a \$200 million-per-year industry. Interestingly, our agricultural customers represent only about 10 percent of our demands but they are ahead of our urban water users in conservation. During the drought in the early '90's, they implemented some significant improvements to their irrigation systems which resulted in halving their per-acre demand without reducing the number of grapes produced, thus doubling their water-use efficiency.

Treated water is supplied to our water retail agencies for municipal and industrial uses. This takes one of two forms. The first is pumped groundwater. In addition to drought use, Zone 7 currently peaks off its groundwater basin during the high



**(Above)** Located in Pleasanton, Zone 7's new Mocho Groundwater Demineralization Plant slows down the buildup of salts and minerals in the groundwater basin, thereby facilitating the use of recycled water. It also helps soften some of the groundwater supplies delivered primarily to the western side of Zone 7's service area.

demand months. During a normal or wet year, the hard groundwater is softened through the use of reverse osmosis membrane technology, then chloraminated to provide a distribution system disinfectant residual.

The second form of treatment is more direct. South Bay Aqueduct water that is not recharged goes directly to one of our surface water treatment plants. Del Valle and Patterson Pass WTPs are both conventional treatment plants. There is also an ultra-filtration membrane facility at the Patterson Pass site. Summertime algal taste and odors are currently addressed by interim treatment with powdered activated carbon (PAC) until long-term plans for ozonation can be implemented. Both plant sites use a combination of solar drying and mechanical dewatering for solids byproducts.

All of our facilities typically produce treated water that is of significantly higher quality than the minimum state and federal primary drinking water standards. In fact, our Del Valle plant just received American Water Works Association's 10-year Directors Award of recognition from the Partnership for Safe Water. Only two other plants in the California-Nevada section qualified for this award.

### **Zone 7 is part of the Bay Area Water Agencies Coalition. What is that and how does being a member benefit your agency...?**

BAWAC is part of the Bay Area's integrated regional water management planning effort's governance group, representing the water-supply functional group (as compared to flood, watershed or wastewater functional groups). By working with BAWAC, Zone 7 has received Prop 50 funding to assist in the construction of the groundwater demineralization/RO facility.

### **What about the Eastern Alameda County Conservation Strategy...?**

U.S. Fish and Wildlife Service asked Zone 7 to organize the EACCS during our negotiations related to development of the Biological Opinion (BO) for the Altamont Water Treatment Plant. The Steering Committee for EACCS is made up of the following agencies: Alameda County Community Development Agency, Alameda County Congestion Management Agency, Alameda County Waste Management Authority, Alameda County Resource Conservation District, California Department of Fish and Game, Cities of Dublin, Livermore, and Pleasanton, East Bay Regional Park District, Natural Resources Conservation Service, San Francisco Bay Regional Water Quality Control Board, U.S. Fish and Wildlife Service, and Zone 7 Water Agency.

Since November 2007, the EACCS Steering Committee has been developing the Conservation Strategy. The Conservation Strategy will provide a blueprint for conservation of specific biological resources, particularly those subject to federal and state regulations, for eastern Alameda County. The framework provided in the Conservation Strategy will inform and streamline environmental documentation and permitting for future development and infrastructure projects.

The Conservation Strategy will be the basis for a programmatic BO for the study area. This will facilitate future environmental permitting by enabling Zone 7 to append its water system and flood protection projects to the biological opinion so long as the avoidance, minimization, and mitigation measures for impacts to focal species are consistent with the Conservation Strategy. The Conservation Strategy will have similar advantages to other Steering Committee members.



## **What is the Alameda Creek Fisheries Restoration Workgroup...?**

Zone 7 has been cooperating closely with various stakeholders within the Alameda Creek watershed for several years to develop data for potential fisheries restoration efforts in the future. Funding partners tend to provide a little more direction for scope of work being performed.

The signatories to the workgroup are:

1. Alameda County Flood Control and Water Conservation District
2. Alameda County Resource Conservation District
3. Alameda County Water District
4. Alameda Creek Alliance
5. American Rivers
6. California State Coastal Conservancy
7. California Department of Fish and Game
8. East Bay Regional Park District
9. National Marine Fisheries Service
10. Natural Resources Defense Council
11. Pacific Gas and Electric Company
12. San Francisco Public Utilities Commission
13. San Francisco Regional Water Quality Control Board
14. U.S. Army Corps of Engineers
15. U.S. Natural Resources Conservation Service
16. U.S. Fish and Wildlife Service
17. Zone 7 Water Agency

In addition, Zone 7 is participating in a pilot program and has executed a Statement of Understanding with Sonoma County Water Agency and NOAA-NMFS to participate in the development of the Central California Coast Steelhead Recovery Program and to provide local data to NMFS.

## **Eastern Alameda County relies on Zone 7 for flood protection. What kind of planning and resources do you have in place to meet that expectation...?**

In 2006, Zone 7 adopted its Stream Management Master Plan (SMMP) and associated programmatic EIR. For the past

40 years, the Valley has relied primarily on channelized arroyos, many of them concrete, to convey stormwaters through the area as quickly as possible. But the new, more environmentally friendly SMMP's vision over the next three decades is to create a flood-protection program that relies largely on using the future Chain of Lakes, a series of mined-out gravel pits between Livermore and Pleasanton, to detain storm water in the Valley. The stored water would be released downstream only after storms pass through the area – meaning arroyos can be kept in a more natural state than under the channelization method.



**Not only significantly less expensive when it comes to flood control, this technical approach also affords opportunities to:**

- increase opportunities for ecosystem enhancements
- improve arroyo water quality and habitat
- increase the connectivity of trails and recreational opportunities in the Valley
- promote public understanding of the watershed through educational programs

An implementation plan for the SMMP which will include some funding options is in a draft format. In the meantime, Zone 7 funds its maintenance and improvements by property tax revenues and its expansion projects by developer impact fees.

## **You're also involved in groundwater basin salt/mineral management. Please explain what you're doing in that area.**

In May 2004, Zone 7 adopted a Salt Management Plan (SMP). This was required under by the San Francisco Bay Regional Water Quality Control Board ("Board") as part of the area's "Master Water Recycling Permit" and was approved by the Board on September 24, 2004. The SMP, which was incorporated by reference into both the Groundwater Management Plan and the Water Quality Management Program (WQMP) Implementation Plan, identifies the need to construct and operate groundwater demineralization facilities to improve the groundwater basin's salt balance, to allow regional water recycling and to improve delivered water quality on the west side of the Zone 7 water delivery system. Start-up of the \$30 million facility is underway (water is already being demineralized) and final completion is expected shortly. ■